TO STUDY PREVALENCE OF DEPRESSION, SUICIDALITY AND QUALITY OF LIFE IN PATIENTS OF SCHIZOPHRENIA

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Dedicated

to

my grandparents

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ABSTRACT

Introduction: Depression being common in schizophrenia (upto 40%) is frequently under-diagnosed as there is overlap with the 'negative symptoms'. Also patients of schizophrenia have upto eightfold increased risk of suicide. Thus depression in schizophrenia becomes an important factor influencing quality of life and risk of suicide.

Aim: To assess the prevalence of depression and suicidality among patients of schizophrenia and to determine their quality of life.

Materials & methods: This Cross-sectional study was conducted in Department of Psychiatry of DMC&H, Ludhiana on 150 patients diagnosed with schizophrenia. Patients were assessed using PANSS for symptoms of schizophrenia, HAM-D for depression, CGI-S for severity of illness, C-SSRS for risk of suicide and QOLs for quality of life.

Results: Majority (60%) of the patients were found to have no depression whereas 30%, 7.3% and 2.7% of the patients were found to have mild, moderate and severe depression respectively. Scores on HAM-D positively correlated with general psychopathological symptom scoring on PANSS ($p<0.05$). It was found that patients who had suicidal ideations had higher mean value on HAM-D scale (19.25) as compared to those without suicidal ideations. Higher scores on PANSS, HAM-D and CGI-S aligned with lower scores on QOL scale indicating poor quality of life in patients of schizophrenia.

Conclusion: Patients of schizophrenia who were depressed had significant effect on suicidality and severity of illness which in turn depicted poor quality of life. Due to overlapping spectrum of the negative symptoms and depressive symptoms it becomes important to identify co-morbid depression in patients with schizophrenia so that this understanding helps in developing extended therapeutic approach.

Keywords: Schizophrenia, Depression, Suicide, Quality of life.

LIST OF ABBREVIATIONS

- BPRS- Brief Psychotic Rating Scale
- CDSS- Calgary Depression Scale for Schizophrenia
- CGI-I – Clinical Global Impression-Improvement
- CGI-S - Clinical Global Impression-Severity
- CHR- Clinical High Risk
- CIDI- Composite International Diagnostic Interview
- C-SSRS- Columbia Suicide Severity Rating Scale
- DSM V- Diagnostic and Statistical Manual 5th edition
- ESM- Experience Sampling Method
- FEDN- First Episode Drug Naive
- FEP- First Episode Psychosis
- HAM-D – Hamilton Depression Rating Scale
- MADRS- Montgomery and Asberg Depression Rating Scale
- PANSS- Positive And Negative Syndrome Scale
- PANSS-FSNS - PANSS-Factor Score for Negative Symptoms
- PANSS-GP- PANSS- General Psychopathology subscale
- PANSS-N- PANSS- Negative subscale
- PANSS-NSS- PANSS-Negative Symptom Subscale
- PWS- Patients With Schizophrenia
- QOL- Quality of Life
- SANS- Scale for Assessment of Negative Symptoms
- SCAN- Schedules for Clinical Assessment in Neuropsychiatry
- SI- Suicidal Ideations
- SMRs- Standardized mortality ratios
- UHR - Ultra High Risk
- WHO- World Health Organization
- WHOQOL-BREF- World Health Organization Quality of Life instrument, Short Form
- WLS- Weighted Least Squares

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INTRODUCTION

Schizophrenia is a neuropsychiatric illness with the prevalence of 1% in general population. Although schizophrenia was first described as a disorder beginning in adolescence or early adult life, current research suggests that onset can be in childhood as well as in older subjects. Manfred Bleuler coined the term ‘‘late-onset schizophrenia’’ which is a form of schizophrenia with onset between the ages of 40 and 60.[1]

Strauss, et al. proposed to distinguish two symptom profiles in schizophrenia: positive symptoms and negative symptoms. Positive symptoms are defined by the presence of abnormal features such as hallucinations, delusions and disorganized thinking. Negative symptoms can be defined by the absence of normal functions, and are characterized by symptoms such as blunted affect, emotional withdrawal along with cognitive deficits.[2] Crow et al. proposed a typology of schizophrenia based on the positive and negative dichotomy.[3]

Schizophrenia is characterized by hallucinations, delusions, disorders of thought and speech, disorders of behavior, disturbance of emotions and affect, cognitive deficits and avolition,[1] Out of which symptoms predominantly present are positive (i.e., delusions, hallucinations) and negative (i.e., avolition, anhedonia, blunted affect) symptoms. Negative symptoms, when present, are assumed to be the most enduring feature of schizophrenia.[4]

Negative symptoms are found to be responsible for chronic morbidity and functional impairment in patients with schizophrenia. Depression being common in schizophrenia is frequently under-diagnosed as the appearance of apathy and affective blunting can be attributed to the disease processes fundamental to schizophrenia instead of a treatable mood disorder.[5]

World Health Organization found that looking sad, mournful or hopeless came out to be the ninth most common early manifestation of the disorder as per the ten country study of onset and course of schizophrenia. [6]

As per DSM-5, depression constitutes as an independent core dimension of schizophrenia instead of being derived from positive, negative, or both types of symptoms and anxiety often coexists with depression in schizophrenia as confirmed in multiple studies. [7]

Depression as a mood disorder is characterized by low mood, apathy and social withdrawal. A triad known as “cognitive triad” is described by Beck in depression which states “life is pointless, the self is worthless and the future hopeless.” The phenomenology of depression in schizophrenia, however, has not often been described in phenomenological terms. As suggested by the recent evidences-self-stigma, shame, difficulty in regaining trust in one’s own thoughts after recovery from delusional beliefs, and poor motivation become the core features rather than other more “biological” symptoms such as diurnal variation in mood, early morning wakening or loss of appetite. Both depression and negative symptoms can have common features, such as social withdrawal, reduced capacity to experience pleasure (anhedonia) and loss of motivation.[8]

If anhedonia is to be considered, recently there has been found distinction between motivational anhedonia (i.e. motivation to pursue rewards) and consummatory anhedonia (i.e. pleasure experienced in anticipation or response to rewards). Motivational anhedonia is better seen as a primary negative symptom where as consummatory anhedonia and difficulty in foreseeing future pleasure may be more in keeping with depression. Strauss and colleagues stressed upon that anhedonia should not be defined as a diminished capacity to experience pleasure but a cognitive dissonance of low pleasure that

emerges when a person is asked to express his future or past positive emotions, elevation of negative emotions or reduced pleasure seeking behavior.[8]

Thus the possibility remains that depression (as a core dimension of psychosis) apart from explaining some of the consistency in biological findings across mood disorders and schizophrenia, also provides potential etiological pathways. This may be specifically pertinent when the patient in his acute phase of illness, i.e., during the early crucial period when disease trajectories are set.[8]

Negative symptoms in depression take up the importance since most of these might remain as residual symptoms or short term or sub-chronic sequel. Negative symptoms are non-specific, though commoner, and may be more severe and longer lasting in schizophrenia. Andreasen and Akiskal (1983) found out that affective flattening is quite common in depression and thus cannot be used to discriminate between schizophrenia and depression. However, other components have also been found to be more frequent in patients with schizophrenia. It is likely that severity of affective flattening may differentiate but since severity of symptoms alters with the stages of disease it may not be of much importance.[9] Preliminary research suggests negative symptoms may be useful in predicting long term outcome and response to treatment.[10]

Depression has been reported to be around 40%, however the stage of illness (early vs chronic) and state (acute or post-psychotic) factors have influence over the figures, which can thus vary considerably. In acute episodes rates are up to 60%, whereas in post-psychotic schizophrenia rates differ between 20% in chronic schizophrenia and 50% following treatment of first episode of moderate to severe depression.[8]

In the past it was thought that the mood symptoms if present indicate good prognosis in schizophrenia and with patients who have high

levels of affective symptoms pointing more towards the “bipolar” rather than deficit/autistic end of a psychosis continuum model. Nevertheless on the contrary, evidence suggests that depression is linked to poorer prognosis in schizophrenia. For example, depression is found to be the most substantial factor in completed suicide in schizophrenia, more so than acting on command hallucinations. Long term consequences of depression affect functional recovery and quality of life. It was found that those patients of schizophrenia with comorbid depression were significantly more likely to relapse, to be a safety concern (aggressive, suicidal, arrested, victimized,), have greater problems related to substance use and report poorer life satisfaction, mental functioning, family relationships, and medication adherence.[8]

Depression is a separate entity for scoring as part of general subscale of PANSS for use in schizophrenia. The Depression/Anxiety factor only includes three items in its narrow definition (and four items in the broad definition). Hence, this modest number of items may result in a decrease in accuracy in measuring these constructs, due to which the concomitant use of specialized scales (e.g., Calgary Depression Scale or Hamilton depression rating scale) may be required for accurately measuring these constructs.[11][12]

Attempted suicide, completed suicide and depression have been linked in chronic schizophrenia.[6] A major obstacle in the prevention of suicide in schizophrenia appears to be difficulty in evaluating the risk of suicidal behaviors, as suicide in this patient population usually results from a sudden, impulsive act that makes the conventional assessment methods based on rating scales and interviews of minute use.[13]

The idea being widely held that suicide among schizophrenics is rather unpredictable and the patients of schizophrenia often fail to put out their suicidal intent openly. However, recently it was found that

before suicide, suicide victims with schizophrenia have a history of communication of suicidal intent as often as others. Therefore it ought to be possible to prevent at least a few schizophrenic suicides. The hindrance appears as it is often difficult to clinically approximate suicide risk with individual schizophrenic patients. Likewise the suicide risk in individual patients may also vary in different treatment phases.[14]

Duko and Ayano Ann, 2018 found that as compared to the general population (suicide prevalence of 1%), people with schizophrenia have a more than eightfold increased risk of suicide. Suicide is the foremost cause of premature death among patients of schizophrenia. Young, male, shorter duration of the illness along with history of multiple previous episodes or previous suicide attempts are the frequent risk factors for suicide in schizophrenia.[15]

Subjective well-being and quality of life (QOL) are increasingly being recognized as important treatment outcomes in patients with schizophrenia. Until lately, treatments for schizophrenia have concentrated on substantially reducing positive symptoms, often leaving patients with various residual difficulties, including negative symptoms and impairment in cognition, everyday living skills, and socio-occupational functioning. Cognitive abilities are associated with functional capacity and community outcomes, and may also affect life satisfaction. Poorer cognitive performance and self-reported functional status (e.g., unmarried, lower social functioning, smaller social support network) are associated with lower subjective QOL. On the contrary, improved cognitive abilities may decode into improved insight, more depression, and lower subjective well-being.[16]

Over the last two decades, Quality of Life (QOL) has gradually emerged a worthwhile concept, which is used as an outcome indicator for the evaluation of services and programs or in clinical trials for therapeutic interventions. Subjective QOL focuses on life satisfaction,

whereas “objective” QOL focuses on participation in activities and interpersonal relationships. Although some theories are being held that QOL is always purely subjective, we have adopted Lehman's use of the terms “subjective” and “objective” QOL as a way to differentiate subjective life satisfaction from observable QOL indicators. Lower everyday functioning capacity and greater severity of positive, negative, and depressive symptoms have been associated with worse QOL.[16]

Depression in schizophrenia has been recognized as one of the important factors influencing the QOL. Other factors include socio-demographic parameters (e.g. age, sex, marital status, education, and income), psychopathology, medication side effects, social support and disability etc. In most of the current studies QOL scores were found to be significantly lower in depressed schizophrenia population.[17]

Research shows that efforts to reduce the symptoms of depression in schizophrenia may ameliorate the quality of life in these patients. Given the frequency of schizophrenic patients and the high cost of treating such patients at health and psychiatric centers, providing facilities for patients to recover and adapt themselves to their condition (insight for disease and tolerance) and improving their quality of life is of immense importance. Adding up to severe disease symptoms, patients who have prolonged hospitalizations, also go through the anguish of being away from their families and relatives. Moreover, they suffer from social isolation and feeling of frustration after a while and they eventually become depressed and unconcerned which reduces their quality of life.[18]

To sum up, the preexisting literature shows significant presence of depression in patients with schizophrenia which is mostly overlooked. It has an impact on the phenomenonology, course and outcome of the illness of patient. Presence of depression also impacts the risk of

suicide and QOL in patients of schizophrenia which needs to be addressed for a better outcome and rehabilitation of patients. As there is dearth of Indian literature on this context, hence this study has been panned, to correlate depression in schizophrenia patients and its consequent effect on suicidality and QOL.

AIMS AND OBJECTIVES

- Primary- To assess the prevalence of depression and suicidality among patients of schizophrenia.
- Secondary-To determine the quality of life.

REVIEW OF LITERATURE

The chapter describing schizophrenia spectrum disorders in DSM-5 begins with a review of the domains of psychopathology that have been used historically for the categorical assessment of schizophrenia and other spectrum disorders. They describe five such domains: hallucinations, delusions, disorganized thought (speech), disorganized or abnormal motor behaviour (including catatonia), and negative symptoms.[19]

The symptom terminology of positive/negative was given by Hughlings Jackson, the British neurologist in 1887 who in his theory of the nervous system classified the negative symptoms as the loss of function which as per his hypothesis was the result of some anatomical lesion. Strauss, Carpenter and Bartko (1974) described negative symptoms as "involving primarily an absence of normal functions" with some authors using the terms "deficit symptoms" (given by Chapman and Chapman 1973) or "defect state symptoms" (given by Andreasen and Olsen 1982). It was hypothesized that the Negative symptoms are persistent across time, predictive of poor outcome, associated with intellectual deterioration, and unresponsive to antipsychotic medication. In addition, negative symptoms were found to be unrelated to the postpsychotic depression.[20] Negative symptoms were not significantly associated with self-reported depressive symptoms.[2][21]

Upthegrove et al. 2009, examined prospectively the course of depression and suicidal thinking prior to, during and in the 12 months following, the first episode of Psychosis by using SCAN (Schedules for Clinical Assessment in Neuropsychiatry) and CDSS (Calgary Depression Scale for schizophrenia) scales. In the prodrome, acute and follow-up periods, it was found that 51 (56%) of participants experienced a clinically significant depressive episode in the 6-month leading up to the first psychotic episode. In the acute phase of illness, 54 (59%) were diagnosed to have moderate or severe depressive episode. Thirty-two (39%) experienced significant depression at one or

both follow-ups during the 12 months following the first episode of psychosis. If calculated in total, during the full course of the first episode, 66 (80%) participants experienced depression, in one or the other phases. Depression with suicidal ideations was present in 52 (63%) participants prospectively. They also found the pattern of depression longitudinally. Eight patterns of the course of depression throughout the first episode were observed: a) Depressed at each stage (22%); b) Depressed in the prodrome and acute phases; no depression in follow-up (17%); c) No prodromal depression; depressed in acute phase (with or without depression in follow- up) (20%); d) No depression throughout (20%). 79% of the sample experienced the most common patterns. 20% patients were found to have no depression throughout. They also found positive correlation of prodromal depression with the development of depression in the acute (v2 = 6.67, P £ 0.01) and follow-up (v2 = 3.22, P = <0.05) phases. The presence of depression during follow-up was significantly associated with the presence of acts of deliberate self-harm.[22]

Hou et al. 2016, stated that depending on how the depressive symptoms are being defined, their prevalence in schizophrenia varies markedly.[7] For instance, a previous review paper of 36 studies by Siris and Bench (2003) showed that the rate of depression in patients with schizophrenia had a wide range varying between 6% and 65%, with a modal rate of approximately 25%.[23] A recent study by Majadas et al., (2012) found that the clinical depression was prevalent in 31% of the chronic patients with schizophrenia.[24] Siris and Bench,(2003) also claimed the presence of variability may be due to the time interval under observation, the phase of the illness[23], and the evaluation tool used for depression identification as per Lako et al., 2012.[25] For example, a study by Mulholland and Cooper, (2000) depicted that the frequency of depression was higher in the acute phase as compared to stable patients of schizophrenia.[26] Furthermore, the highest rates of depression were found in the studies that estimated the accumulated prevalence from 3 to 5 years again done by Siris and Bench (2003).[23]

In multiple longitudinal studies it was found that 25%–40% of patients with schizophrenia had depression at baseline and follow-up, 35%–45% were found to have no depression at both baseline and follow-up, 10%–17% became depressed over time, and 13%–19% transitioned to non-depression over time.[27][28][25] Most recently Cohen and Ryu, (2015) in their longitudinal study examining depression in adults with schizophrenia after mean 54-month follow-up depicted that persistent depression occurred in about 2/5th of patients, 30% were found to have no depression, and 1/4th fluctuated between depression and non-depression.[29]

J. Dai et al. 2017 found in their study that comorbid depressive symptoms were positively associated with negative and general psychopathological symptoms in schizophrenia. Previous studies have explored the relationship between depression and psychosis especially negative symptoms in schizophrenia, with mixed results.[23]

Anne DH et al. 2016 in their longitudinal study focused chiefly on the interrelationship between depressive and negative or positive symptoms in the long-term course of schizophrenia which depicted a positive association between the SANS, subsyndrome-anhedonia and depressive symptoms which remained stable over a period of 5 years; there was found association between abulia and depression which grew increasingly evident over the illness course.[30]

Brown P 2015 analyzed the interrelationship between depressive and negative symptoms in the long-term course of schizophrenia follows up on their previous analyses which focused mainly on the association between negative and positive symptoms over the long-term course of schizophrenia, along with the course of negative symptoms in relation to that of depressive and positive symptoms. Studies which assess these three important symptom dimension of schizophrenia and their interrelatedness in cross section or longitudinally face the difficulty of enlisting them by individual symptoms. [31]

Bosanac P et al., 2012 conducted longitudinal study where depression was investigated in schizophrenia; it was found that majority, up to 80%, of patients experience a clinically significant depressive episode at 1 or more point of time during the early phase. This highlights how cross-sectional rates clearly miscalculate the true prevalence and suggests that at least in the early phase of illness, mood symptoms may be more than “comorbid” occurrence. The wide range in reported figures for depression is also partly ascribed to the challenge in distinguishing mood symptoms from negative symptoms, suggesting a complex and so far poorly understood partly cover other symptom dimensions at a phenomenological level.[32] In a study by Birchwood et al., it has been shown that depression follows the same course as positive symptoms following recovery from the acute episode.[33]

In the ABC Schizophrenia Study the lifetime prevalence of ‘depressive mood’ at first admission was 84.9 %. (31) Fanta et al. 2020, found the prevalence of depression to be 18% (14.5–22.3%) among schizophrenic patients. Out of the total participants with depression, 47.78% had mild, 34.62% had moderate, 15.4% had moderately severe, and 2.2% had severe depression.[34] Zisook et al. 1999, in their study had almost similar findings as they found the prevalence of depression in USA to be 20%.[35]

Fusar-Poli et al. 2013, in their study, examining very early phases of illness, in groups identified as ultra high risk (UHR) for psychosis, high rates of “comorbid” axis one diagnoses are reported, with over 40% meeting the criteria for depressive disorder, prevailing over anxiety or other mood symptoms.[36]

Conley et al. 2007, conducted a large, prospective, naturalistic, U.S., multi-site study where majority of the patients (95.7%) were assessed with the MADRS at enrollment and had following outcome measures after enrollment. About 1/3rd of those included (39.4%, n=877) were

labeled “Depressed” at enrollment, whereas 61% were “Non-depressed” at enrollment (n=1351). On comparison across the 3-year study, with adjustments for age, sex, and race, the depressed cohort was significantly ($p<.05$) more likely than the Non-depressed to have poorer outcomes on most outcome variables. It was found that about 1/3rd (39.4%) of the participants with schizophrenia were concurrently depressed at enrollment, with marked stability in prevalence rates of depressive symptoms across the 3-year study. Findings are highly consistent with multiple research.[37][38][27] They also found that the depressive symptoms were found to be associated with considerable long-term burden in the treatment of schizophrenia as the poorer long-term functional outcomes in multiple domains. The Depressed were more likely to relapse, to be of greater danger to self and others (violent, arrested, victimized, suicidal), to have more substance-related problems, to evidence poorer social and family relationships, and to have a poorer quality of life, lower motivational level, poorer level of functioning, poorer mental and physical health, lower level of medication adherence, and less general life satisfaction.[28]

T. J. Crow proposed the 2 symptom groups that represent relatively independent dimensions of psychopathology and may reflect different underlying disease processes. The constellation referred to as the type I syndrome (of positive symptoms) is more characteristically seen in acute psychotic episodes and the type II syndrome (of negative symptoms) is more frequent in chronic illnesses and is equivalent to what is sometimes described as the 'defect state'. However, this is not an inflexible rule, since positive symptoms may still be present after many years in an institution and negative symptoms are seen in some patients with acute schizophrenia particularly if there have been previous episodes.[39]

Andreasen et al., found that depressive symptoms are common in chronic schizophrenia.[40] Furthermore, preliminary research by Angrist et al. 2001 suggests that these symptoms of depression may be useful

in predicting long-term outcome" and their response to treatment,[41] in distinguishing between neurotic illness such as mania and schizophrenia,[42] and in recognizing patients with structural brain abnormalities.[43][44] The pattern of the symptoms, in addition to course and family history, is what differentiates the patients of schizophrenia from patients with affective disorders.[40]

Chaturvedi et al. studied negative symptoms in schizophrenia and depression. He proposed that the severity of flattening of affect may differentiate between depression and negative symptoms but since severity of symptoms alters with the stages of disease it may not be of much importance. As already depicted by Andreasen and Akiskal, it has been found that depressives and schizophrenics do not differ substantially in severity of negative symptoms.[9] Flat affect was reported in 24% of depressives at one and a half year follow-up by Pogue-Giele and Harrow. Other negative symptoms as poor physical hygiene, impersistence at work, inattention and inability to feel intimacy were observed more in schizophrenics. Some of the differences could be due to the differing duration of illness between the two groups of patients more schizophrenics having a duration longer than one year. It seems probable that less specificity would be found during the acute phases of both illnesses, as was speculated by Pogue- Geile and Harrow.[21]

Muller et al., 2006 found that depressive symptoms were often associated with other symptom dimensions, particularly negative symptoms. Tan and Rossell, 2016 also contributed that depression mainly affects daily activities and social functions.[45] For instance, various studies have shown results stating co-morbid depression in schizophrenia is associated with overall reduced functioning, worse employment status, poor quality of life, a greater risk of relapse or hospitalization, and an increased risk of suicide.[46][47][17] Narvaez et al., 2008 found the presence of depressive symptoms in patients with schizophrenia has been associated with overall poor outcomes[16], and

also with an imminent onset of a psychotic relapse as described by Cohen and Ryu, 2015.[29] Siris et al., 2001; Addington et al., 2002a, 2002b found that antipsychotic drugs induce a remission of both psychotic symptoms and depressive symptoms; however, if we add antidepressants for dual therapy of psychosis and depression, the results are equivocal.[23]

Richard et al. found in his study there exists an interrelationship between the depressive symptoms of schizophrenia and the psychosis itself. They proposed the timing model which stated that schizophrenia was essentially the same disorder in the two sexes but had an early onset in men and a late onset in women.[48] S K Chaturvedi et al. found that there's no role of duration of illness, hospitalization, medication, age or sex in producing negative symptoms.[49] Chaturvedi et al., found that the duration of hospitalization or duration of illness did not affect either anhedonia-associability or avolition-apathy which was contrary to observations of Strauss et al. who believed that the negative symptoms increase as the illness becomes more chronic or with institutionalization.[50][51]

Johnson et al., stated that the role of continuing medications in chronic schizophrenics has been a controversial area. As per their surveys they found no difference of outcome between patients discontinuing medications and those continuing. Andreasen and Oslen, Wing and Brown and Owens and Johnstone described that neuroleptic medication as such does not contribute to development of deficits or negative symptoms. S K Chaturvedi et al. in his study also has found no difference in severity of negative symptoms between patients continuing or not continuing medications. These patients were not on any medication for more than two years as the clinical status, had been stable and the symptoms were not showing even slightest improvement.[49]

R. Dutta et al. 2011 stated depression as the most significant factor in completed suicide in schizophrenia, more so than acting on command hallucinations.[52] Fanta et al. 2020 found that the patients with a history of suicide attempt were 5.24 times more likely to develop depression compared to those who had no prior history of suicide attempt, which is explained by the fact that suicide attempt goes up to 50% in patients with Schizophrenia and also suicide is one of the symptoms of depression; the presence of depression may also potentiate risk of suicide attempt in these patients. They also found that substance use, duration of illness between 6 and 10 years, suicidality and poor quality of life were found to be significant factors associated with depression among the patients of schizophrenia. There was strong substantiation of a positive association between depression and history of suicidal attempt/ideations, history of use of substance, the duration of illness and quality of life among schizophrenic patients.[34]

Gill et al. 2016 compared symptoms between groups of patients who had suicidal ideation (SI) from past six months and those who had no SI, predicting that individuals with recent SI would have higher total positive and negative symptoms, as reported by Andriopoulos et al., 2011 as well. It was also further hypothesized that those patients who currently reported SI had poorer functioning, mainly role deficits. They also studied the levels of severity and the intensity of SI by the C-SSRS in relation to the positive symptoms, negative symptoms and functioning in the clinically high risk (CHR) group in which they found no relationship to positive symptoms. There was, however, a strong relationship of the level of severity and intensity of SI to total negative symptoms and functioning. Depressive symptoms were correlated with negative symptoms, severity and intensity of SI and functioning with $p<0.05$.[53]

El-Bahy and Mohamed 2013 found that patients of schizophrenia who had comorbid depression were found to have significantly higher score on the PANSS-total, the general psychopathology subscale of the

PANSS (PANSS-GP), and negative symptoms on the PANSS (PANSS-N) compared with non depressed patients. However, there no significant difference was found between depressed and non depressed patients in terms of positive symptoms.[54]

Fanta et al. 2020 found that the patients with poor quality of life were 3.13 times more prone to be depressed as compared to those with good quality of life (AOR = 3.13 95%CI).[34] Similar findings were reported by James R. Sands and Martin Harrow. They reported that there is a negative relationship between quality of life and depression; along with the negative relationship between quality of life and Schizophrenia. Thus they concluded that co-presence of depression and Schizophrenia synergistically affect the quality of life of this particular patient.[38]

Sands and harrow conducted a study in which they found that the patients of schizophrenia who were depressed during both followup years had significantly more psychotic symptoms ($p< 0.05$), worse overall outcome ($p = 0.004$), and lower employment (p - 0.001). They also showed trends toward lower activity levels ($p = 0.11$) and toward more suicidal ideation ($p = 0.11$).[55] Fanta et al. 2020 mentioned that those patients who had a history of suicide attempt were 5.24 times more prone to develop depression compared to those who did not have past history of suicide attempt (AOR = 5.24, 95%CI). This result was in agreement with the findings of the studies performed in Chicago and Poland.[34][55][56]

Bowie et al. 2008 stated that there is emerging evidence that depressive symptoms, regardless of how they are assessed, are associated with impairment in everyday functions, poorer quality of life, and greater need for medication and hospitalization in patients with schizophrenia.[57][58][59] Goldman et al. addressed that the relationship between negative symptoms and depression in schizophrenia has clearly been dependent on the rating instruments employed to measure

these constructs. Studies have typically used specific negative symptom scales such as the Scale for the Assessment of Negative Symptoms (SANS) and global depression measures such as the HAM-D. This was largely premised on the assumption that the HAM-D measured the same homogeneous constructs in schizophrenics as in a depressive population[60] Hamilton depression scale was not designed as a measure of depressive symptoms for schizophrenic patients, it has been used in numerous studies to measure severity of depressive symptoms in schizophrenic patients, and factor analytic studies have found discrete factors reliable and valid for this population.[35]

Zisook S et al. stated that all depression scales had moderate to large correlations with positive symptoms; the correlation between the four-item Hamilton depression subscale and the SAPS upheld a significant association even with Bonferroni corrections. On the contrary, nonsignificant relationship was found with severity of negative symptoms and was less consistent in size. Thus it was concluded that the depressive symptoms seemed to be strongly related with positive than with negative symptoms of schizophrenia.[35]

Chemerinski et al. 2008 stated that negative symptoms in patients with schizophrenia may influence ratings of depression and clinician should be aware that depressive symptoms in these patients might lead to functional limitations, particularly in the actual deployment of skills in the real world. Thus, for majority of the patients with schizophrenia, depression might be an important treatment target for disability reduction.[59]

Zisook S et al. also found that no differences in depression severity ratings were found between patients treated and those not treated with antidepressants. In majority cases, the medication may have been given to treat insomnia, as the sub-antidepressant doses of relatively sedating antidepressants often were given; in some cases, physicians may have been attempting to treat dysphoria or demoralization.[35]

R. Upthegrove et al. 2016 stated that even though depression in schizophrenia is increasingly recognized as a dimension of schizophrenia psychopathology, clinically it remains inadequately treated. It is significant in the prediction of transition to First episode psychosis (FEP), poor clinical outcomes, quality of life, and suicide. Yet all this has not been translated into commensurate clinical recognition and to the resolution of uncertainty in therapeutic approaches. FEP sees the highest rate of decline in functioning, and high rates of depression, yet conversely it is a period of high level of recovery from positive symptoms. This underlines the need for focused interventions out with positive symptoms.[8] T. Lataster et al.2012 in their experience sampling method (ESM) studies demonstrated the patients with schizophrenia are more stress reactive than first degree relatives or healthy controls, and this emotional reactivity correlates with positive symptoms and need for care.[61]

Cohen and Ryu, 2015 in their recent longitudinal study examining depression in older adults with schizophrenia after mean 54-month follow-up found that persistent depression occurred in about two-fifths of persons, 30% remain persistently non-depressed, and one-fourth may fluctuate between depression and non-depression.[29]

World Health Organization 1973 stated that the comorbid depression is possibly more frequently seen in the acute stage of schizophrenia with the highest point prevalence of 80 %. Baynes et al. 2000 also found that low rate of depression occurs in the chronic stage of the illness, with a frequency of 4–25 %.[7]

Mohammed Ayalew et. Al. 2021 found that the prevalence of suicide behavior among patients with schizophrenia (PWS) was 30.3%. Presence of unemployment, family history of suicide, substance use, current positive psychotic symptoms especially delusions and the

presence of comorbid depression were found to be independent significant predictors with suicidal behavior in PWS.[62]

McGrath et al. 2008 stated that as compared with the general population, people with schizophrenia have a 2-3 fold increased risk of dying. Even though suicide contributes to the increased mortality associated with schizophrenia, individuals with schizophrenia have increased mortality risks due to a wide range of comorbid somatic conditions. Disturbingly, over recent decades, it has been found that the differential mortality gap associated with schizophrenia has been increasing. If mortality rates in the general population decrease over time at a faster rate than those for people with schizophrenia, then SMRs (Standardized mortality ratios) for schizophrenia will increase over time. Saha S et al. 2007 also suggested that the case fatality rate in schizophrenia had remained stable in recent decades[63] which was confirmed by McGrath et al. 2008 and their data suggested that the differential mortality gap has widened over time because the patient group did not share in the improved health of the general community.[64]

Y. Li et al. 2017 stated that only one study done by Hou et al., 2016 investigated the prevalence and correlates of comorbid moderate–severe depressive symptoms and their association with quality of life (QOL) in Chinese chronic schizophrenia patients, which showed that depressive symptoms (defined as a total score of 9 or above on the MADRS) were present in 54.1% of patients. Moreover, comorbid depression was significantly associated with lower mental QOL. Depressive symptoms were significantly and negatively associated QOL, underlying the important contributing effect depressive symptoms have on QOL in patients with schizophrenia, which is in alignment with the results of other studies by Wegener et al., 2005; Xiang et al., 2012a and Hou et al., 2016a. At the same time, severe negative and anxiety symptoms and suicidality were associated with lower QOL as also found consistent with previous study by Xiang et al., 2007b, 2008b. [65]

Akinsulore et al. 2014 found that 27 % of patients were found to have depression. The patients who were depressed reported lower scores in all domains of quality of life (QOL) ($p<0.05$) as compared with the patients who had no depression. All domains of QOL negatively correlated with the total PANSS and all its subscales ($p<0.05$). Severity of depression was negatively correlated with all QOL domains and the findings were significant. All QOL domains except the environmental domain also was found to have significant positive correlation. Employment status formed an important indicator of patient's functioning and the level to which the society offers opportunity for gainful employment.[46]

To summarize, as per the existing literature, depression being an independent and frequently common entity in patients with schizophrenia affects various parameters such as increasing the susceptibility of the patient to attempt suicide or further deteriorate the quality of life. Depression has been directly linked to the severity of illness and thus additionally affects the course and outcome of the illness. As there is dearth of Indian data on this context, hence this study has been planned, to correlate depression in schizophrenia patients, its consequent effect on suicidality and to further determine their quality of life. Depressive symptoms tend to overlap with the negative symptoms in patients with schizophrenia and these negative symptoms may influence ratings of depression as has been quoted in above given literature. Awareness regarding the presence of depressive symptoms in patients of schizophrenia and adequate differentiation with the negative symptoms might help us remove the functional limitations with appropriate treatment of affective symptoms concurrent with schizophrenia.

MATERIALS AND METHOD

SOURCE OF DATA

The diagnosed cases of schizophrenia were included from the Outpatient and Inpatient Department of Psychiatry of DMC&H, Ludhiana after taking informed written consent from the patient or the primary caregiver.

METHOD OF COLLECTION OF DATA

Sample collection: This hospital based, cross-sectional study, was conducted in Dayanand Medical College & Hospital, Ludhiana over a period of one year.

Sample size: Keeping in view the incidence of depression in schizophrenia is 25%[24,45]

Assumptions: Confidence Level = 95% with Precision (d) = ± 7%

For estimation of sample size, the following formula has been used

$n = (Z^2\alpha \times P \times (1-P))/d^2$

Where; Zα = Value of standard normal variate corresponding to α level of significance, P = Likely value of parameter

Q = 1 – P

d = Margin of errors which is a measure of precision

With these assumptions the sample size works out as 147. A total of 150 schizophrenia patients diagnosed as per DSM-5 were included in the study**.**

Inclusion criteria:

1) Age >18 years and <65 years.

2) Diagnosed cases of schizophrenia as per DSM 5.

3) Patient / primary caregiver who gives consent for the study**.**

Exclusion Criteria:

1) Age <18 years and >64 years.

2) Any patient with other co-morbid psychiatric and medical illness (except nicotine dependence).

3) Patient/primary caregiver who doesn't consent for the study.

4) Patients of schizophrenia who exhibited the symptoms of violence, agitation, grossly disorganized behavior and who posed a threat to others or themselves and those unable to give consent.

TOOLS: Enrolled patients for the present study were diagnosed as per DSM 5 criteria for schizophrenia. Depressive symptoms were assessed on the basis of clinical interview under the supervision of supervisor and co-supervisor and then the severity was assessed using Hamilton depression rating scale (Ham-D). Other scales applied were- Positive and negative syndrome rating scale (PANSS) for symptoms of schizophrenia, Clinical global impression-severity scale (CGI-S) for severity of illness, Columbia-Suicide Severity Rating Scale(C-SSRS) for risk of suicide and Quality of Life Scale (QOLs) for quality of life.

- 1) Positive and Negative Syndrome Scale (PANSS)
  2) Hamilton Depression Rating Scale (HAM-D)
  3) Columbia-Suicide Severity Rating Scale (C-SSRS)
  4) Clinical Global Impression-Severity Scale (CGI-S)
  5) Quality Of Life Scale (QOLs)
  6) Sociodemographic Pro-forma

  - PANSS -The instrument was developed by Kay et al. (1987) to assess psychopathology of schizophrenia which includes: positive, negative, general psychopathology symptoms. It has 30 items on 1–7 point continuums. The estimation of the reliability and internal consistency showed high values of Cronbach's alpha (0.809 and 0.931).
    - 30 item scale with 3 categories of symptoms,
      Positive (7 items-score range 7-49)
      Negative (7 Items-Score Range 7-49)
      General Psychopathology (16 Items-Score Range 16-112)
  - HAM-D - Hamilton Depression Rating Scale (HAMD) (Hamilton, 1960; Zhang, 1993).The scoring is based on the first 17 items. Eight items are scored on a 5-point scale, ranging from 0 (not present) to 4 (severe). Nine items are scored from0 (none) to 2 (symptom-specific severity

descriptor). Patients were classified into two groups using HAMD rating cut-offs: ≤7 = not depressed (NDP) and ≥8 = depressed (DP) (Park et al., 2016). Then moderate to severe depressive symptoms were defined as a total score of 14 or above on the HAMD-17(Liu et al., 2014).

-21 item scale, scoring is based on first 17 items,

Normal (Score 0-7)

Mild Depression (Score 8-13)

Moderate Depression (Score 14-18)

Severe Depression (19-22)

Very Severe Depression (>22)

- C-SSRS – The Columbia–Suicide Severity Rating Scale (C-SSRS) was designed by Kelly Posner to quantify the severity of suicidal ideation and behavior. It had 99.4% specificity and 100% sensitivity in correctly identifying aborted attempts and 100% sensitivity and specificity for both interrupted and actual attempts. Internal consistency of the intensity subscale across all visits was moderate, with a Cronbach's alpha of 0.73. Sum ranges from 2-25, with the higher number indicating more intense ideation.
- CGI-S - Cross-sectional scale, rating the severity of illness ranging from normal (score 1) to extremely ill subjects (score 7). Derived from clinical global impression scale, which is a global rating scale that gives an overall measure of the severity of a patient's illness on a 7-point scale ranging from 'Normal' 1 to 'Extremely Ill' 7, according to the clinician's experience of patients suffering from the same condition. This rating is based upon observed and reported symptoms, behavior, and function in the past seven days. Clearly, symptoms and behavior can fluctuate over a week; the score should reflect the average severity level across the seven days.

- QOLS- the Quality of Life Scale (QOLS) first developed by American psychologist, John Flanagan, is a 16 Item self-administered questionnaire designed for assessing quality of life. The seven responses are "delighted" (7), "pleased" (6), "mostly satisfied" (5), "mixed" (4), "mostly dissatisfied" (3), "unhappy" (2), "terrible" (1). Higher the score, better the quality of life. Total scale score (possible range: 16 - 112)
- Sociodemographic pro-forma will include name of the patient, age, gender, MRD number, education, income, marital status, occupation, age of onset of schizophrenia, duration of illness, time between onset of symptoms and seeking first medical advice, compliance, co-morbid nicotine use, family history of schizophrenia, family history of any other mental illness except schizophrenia, past history of suicidal ideations /behaviour /attempt, family history of suicide.

Statistical analysis:

Data were described in terms of range; mean ±standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. To determine whether the data were normally distributed, a Kolmogorov-Smirnov test was used. Comparison of quantitative variables between the study groups was done using Mann Whitney *U* test and ANOVA test. For comparing categorical data, Chi square ($\chi 2$) test was performed and spearman correlation was also used. A probability value (*p* value) less than 0.05 was considered statistically significant. All statistical calculations were done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

OBSERVATIONS AND RESULTS

AGE GROUP	No. of cases	Percentage
< 30	60	40.0%
31-40	49	32.7%
> 40	41	27.3%
Total	150	100.0%

TABLE 1: AGE WISE DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA.

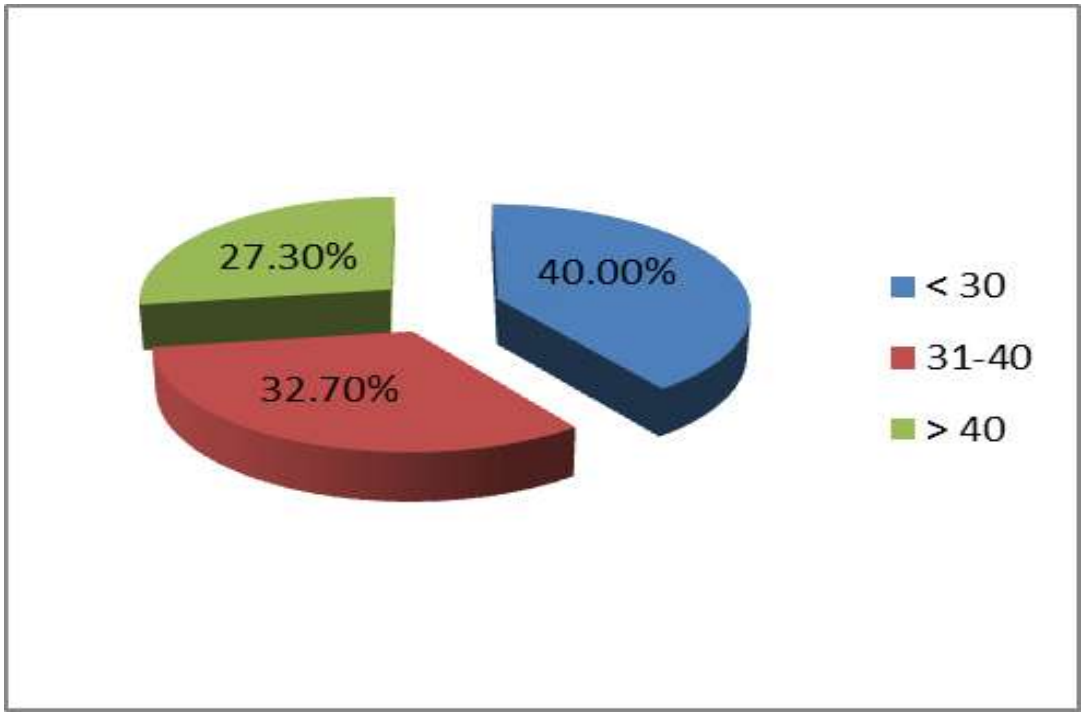

FIGURE 1: AGE WISE DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA

; Shows majority belonged to younger age group (<30 years)

GENDER	No. of cases	Percentage
F	64	42.7%
M	86	57.3%
Total	150	100.0%

TABLE 2: GENDER WISE DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA.

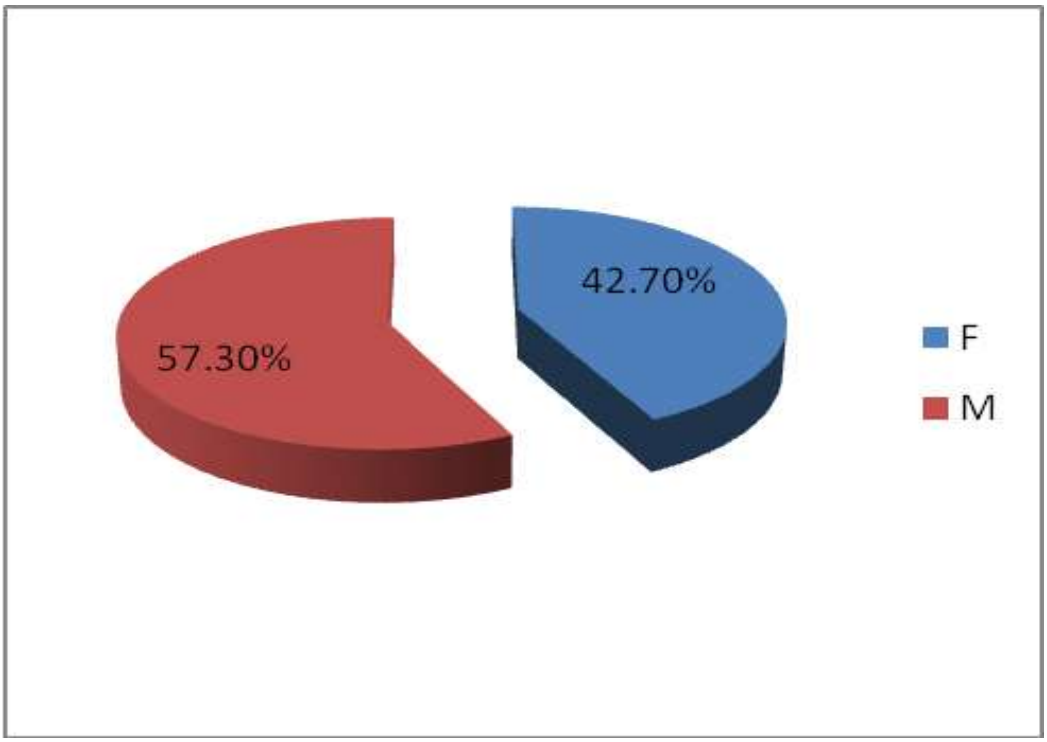

FIGURE 2: GENDER WISE DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA; Majority were males

MARITAL STATUS	No. of cases	Percentage
DIVORCED	9	6.0%
MARRIED	66	44.0%
UNMARRIED	74	49.3%
WIDOW	1	0.7%
Total	150	100.0%

TABLE 3: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA WITH RESPECT TO MARITAL STATUS

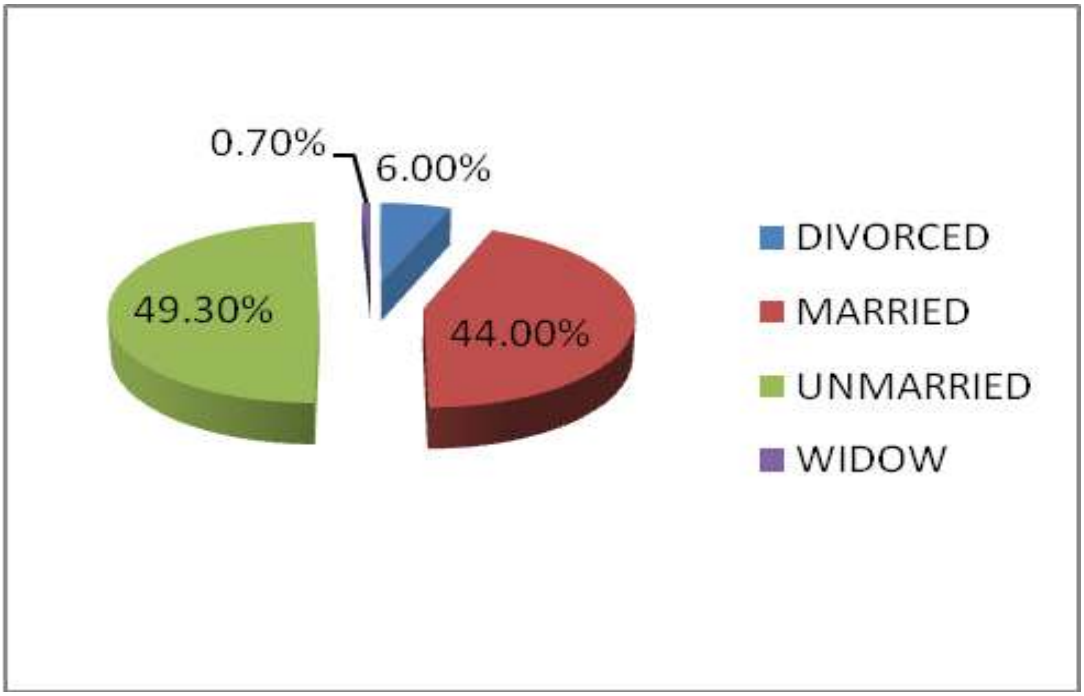

FIGURE 3: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA WITH RESPECT TO MARITAL STATUS

; Shows unmarried population forms the maximum number

EDUCATION GROUP	No. of cases	Percentage
ILLITERATE	7	4.7%
UPTO 12	105	70.0%
GRADUATE	30	20.0%
POST GRADUATE	8	5.3%
Total	150	100.0%

TABLE 4: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA ACCORDING TO EDUCATION LEVEL

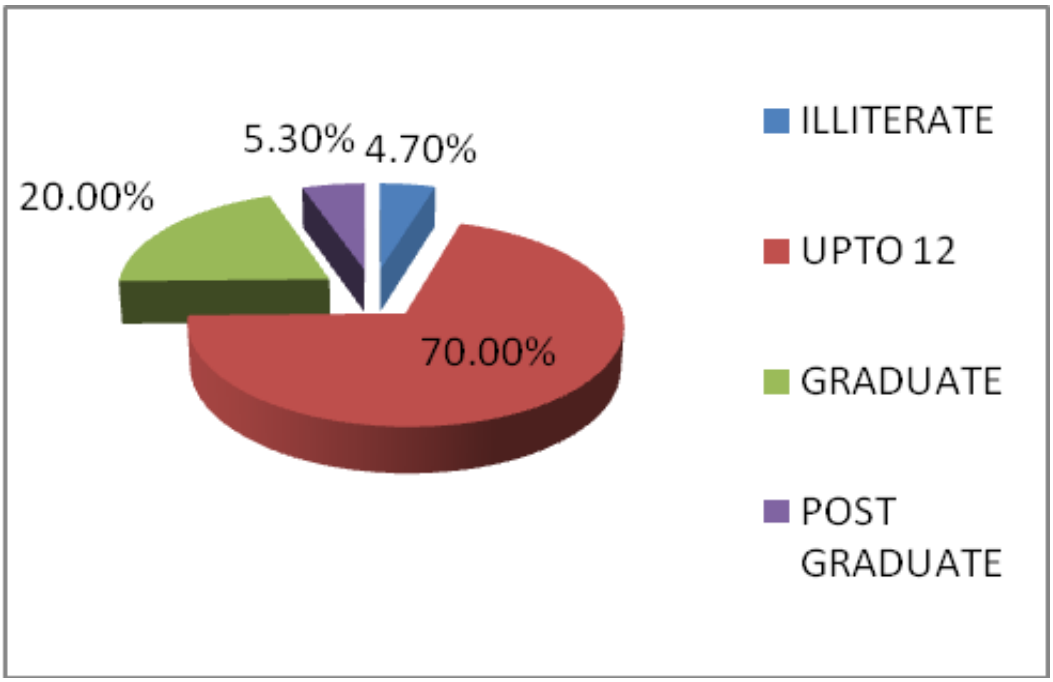

FIGURE 4: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA ACCORDING TO EDUCATION LEVEL

; Shows most of the patients in our study were literate.

OCCUPATION/LOSS OF FUNCTION	No. of cases	Percentage
EMPLOYED	21	14.0%
UNEMPLOYED	129	86.0%
Total	150	100.0%

TABLE 5: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA ACCORDING TO OCCUPATIONAL STATUS

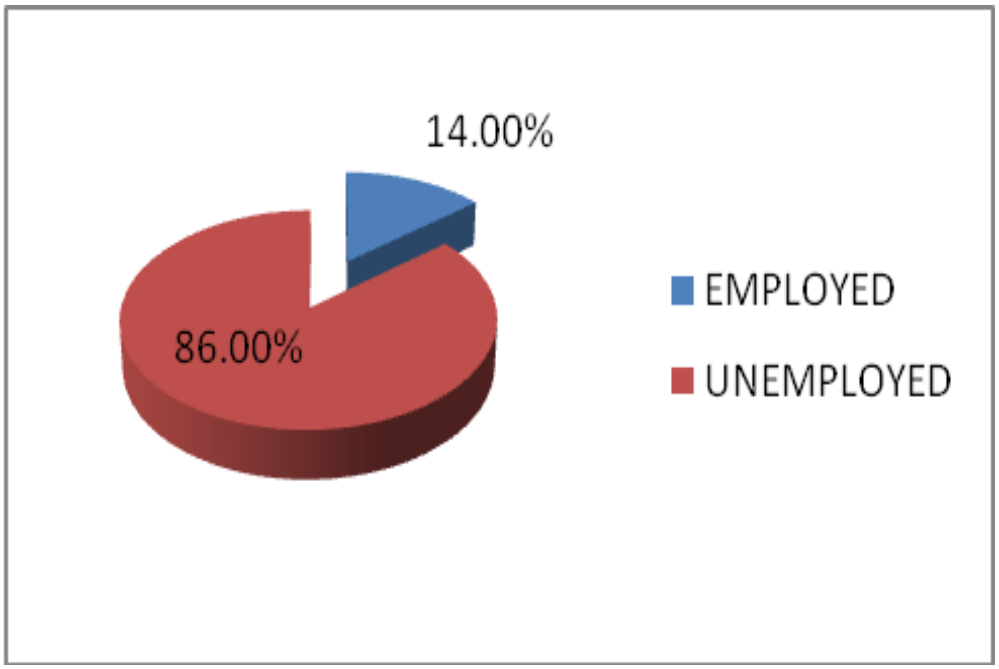

Figure 5: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA ACCORDING TO OCCUPATIONAL STATUS

; Majority of the patients were unemployed

URBAN/RURAL	No. of cases	Percentage
RURAL	87	58.0%
URBAN	63	42.0%

TABLE 6: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA ACCORDING TO RESIDENTIAL OCCUPANCY

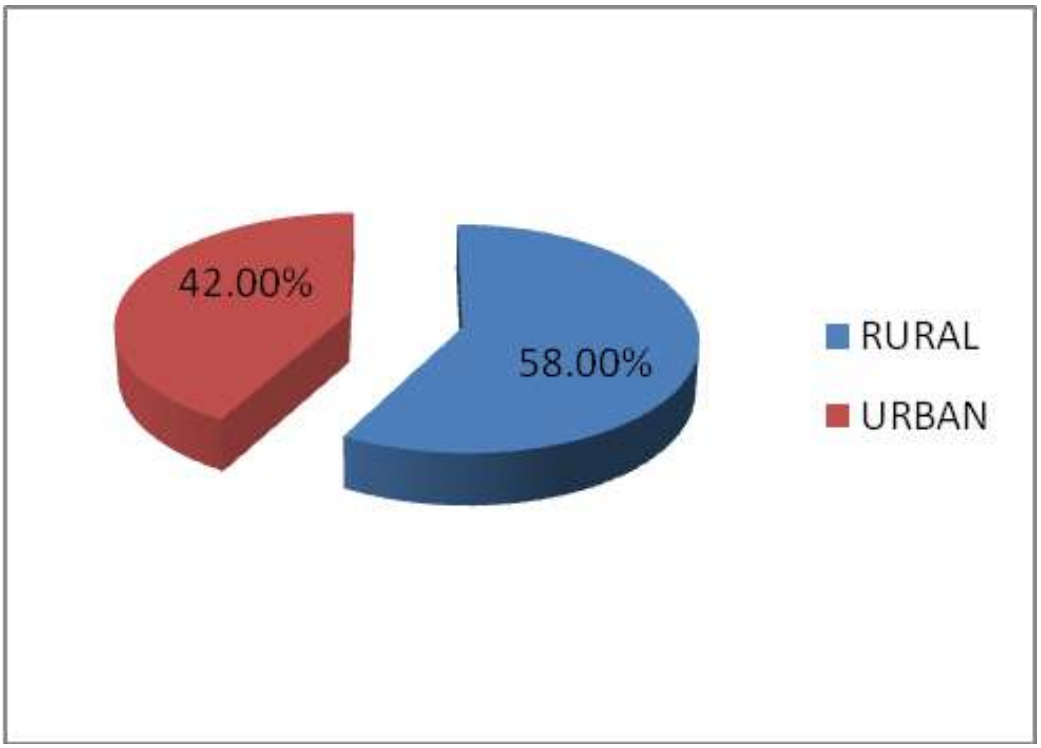

FIGURE 6: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA ACCORDING TO RESIDENTIAL OCCUPANCY

; Predominantly resided in rural areas

TYPE OF FAMILY	No. of cases	Percentage
JOINT	78	52.0%
NUCLEAR	72	48.0%
Total	150	100.0%

TABLE 7: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA ACCORDING TO TYPE OF FAMILY

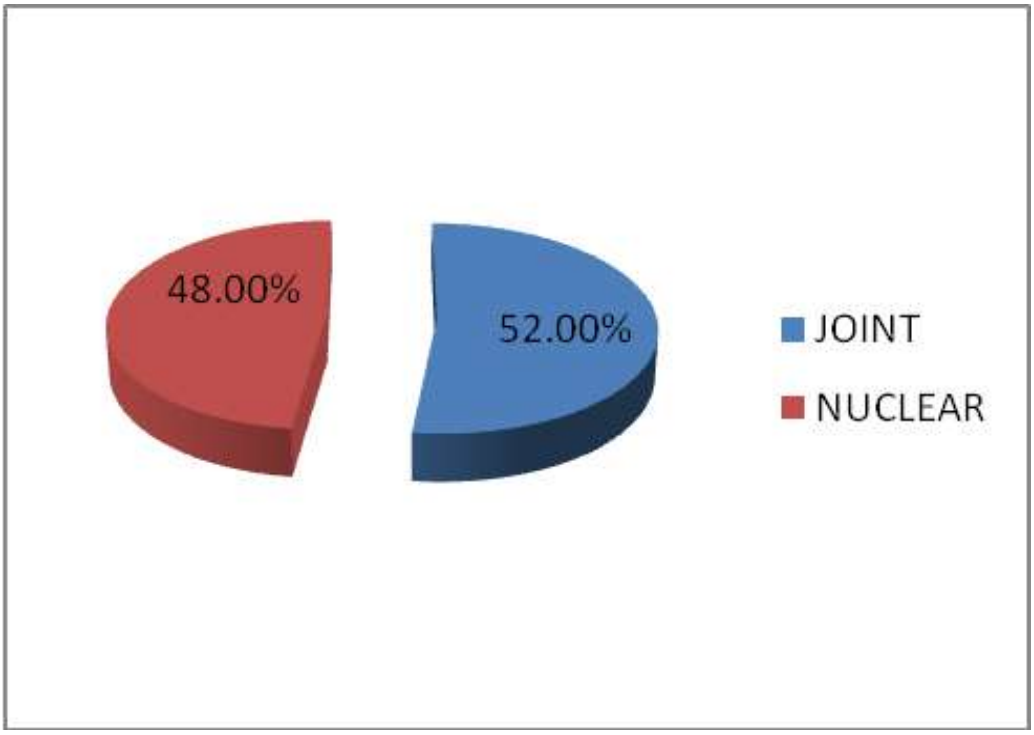

FIGURE 7: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA ACCORDING TO TYPE OF FAMILY

; Predominantly lived in joint families

COMPLAINCE	No. of cases	Percentage
NO	42	28.0%
YES	108	72.0%
Total	150	100.0%

TABLE 8: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA WITH RESPECT TO COMPLIANCE

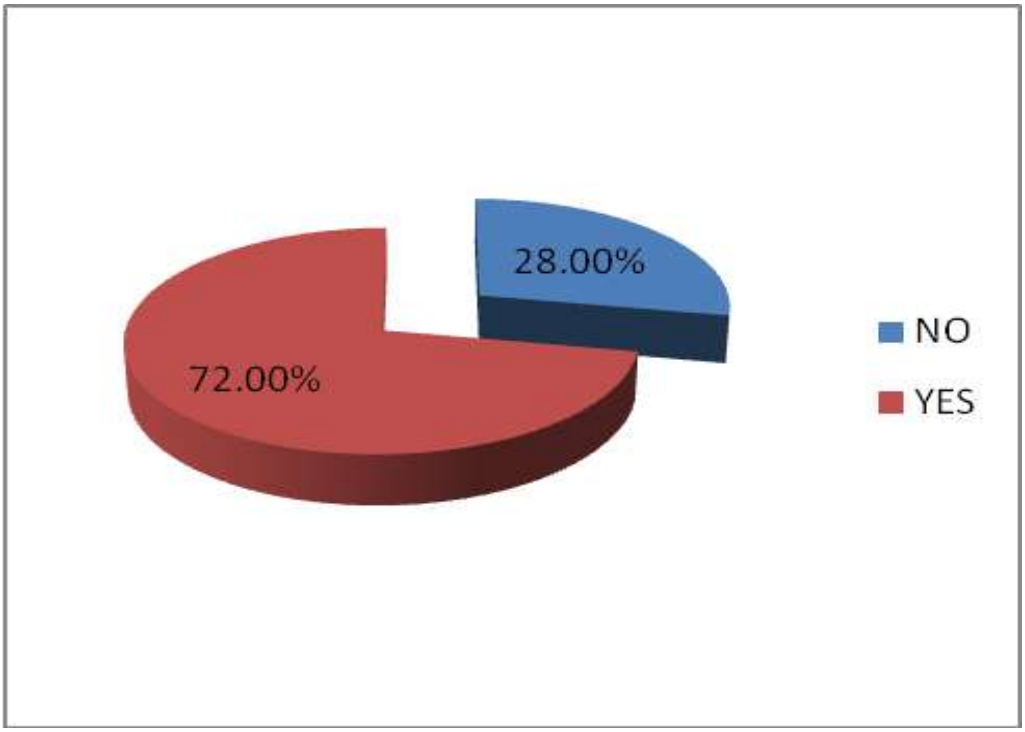

FIGURE 8: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA WITH RESPECT TO COMPLIANCE

; Majority of the patients remained compliant

CO-MORBID NICOTINE USE	No. of cases	Percentage
NO	92	61.3%
YES	58	38.7%
Total	150	100.0%

TABLE 9: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA WITH RESPECT TO NICOTINE USE

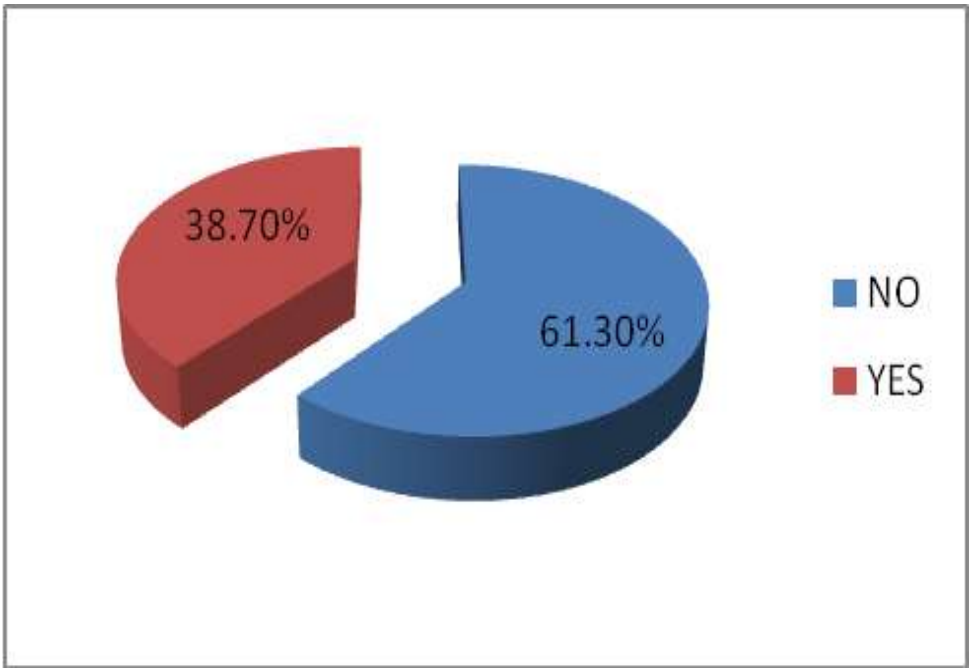

FIGURE 9: DISTRIBUTION OF PATIENTS OF SCHIZOPHRENIA WITH RESPECT TO NICOTINE USE

; Majority of patients did not consume nicotine

CSSRS- SUICIDAL IDEATION	No. of cases	Percentage
NO	146	97.3%
YES	4	2.7%
Total	150	100.0%

TABLE 10: DISTRIBUTION OF PATIENTS WITH RESPECT TO PRESENCE OF SUICIDAL IDEATION

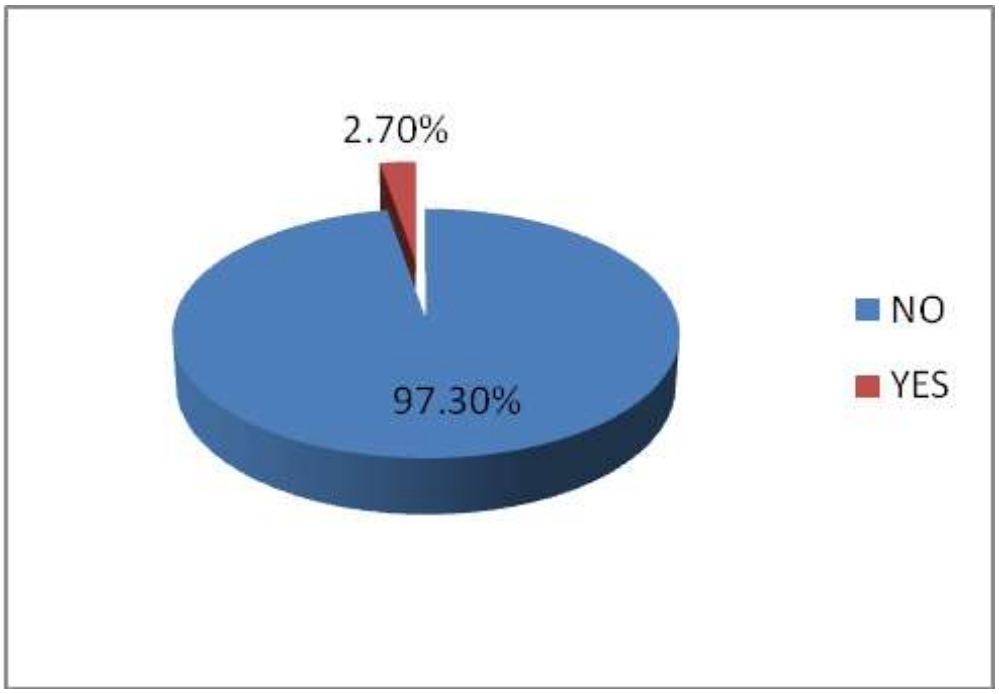

FIGURE 10: DISTRIBUTION OF PATIENTS WITH RESPECT TO PRESENCE OF SUICIDAL IDEATION

; Only 2.7% of the patients had suicidal ideations

HAM-D	No. of cases	Percentage
0-7.0	90	60.0%
8-13.0	45	30.0%
13-18	11	7.3%
19-22.0	4	2.7%
Total	150	100.0%

Table 11: DISTRIBUTION OF PATIENTS AS PER SEVERITY OF DEPRESSION ON HAM-D

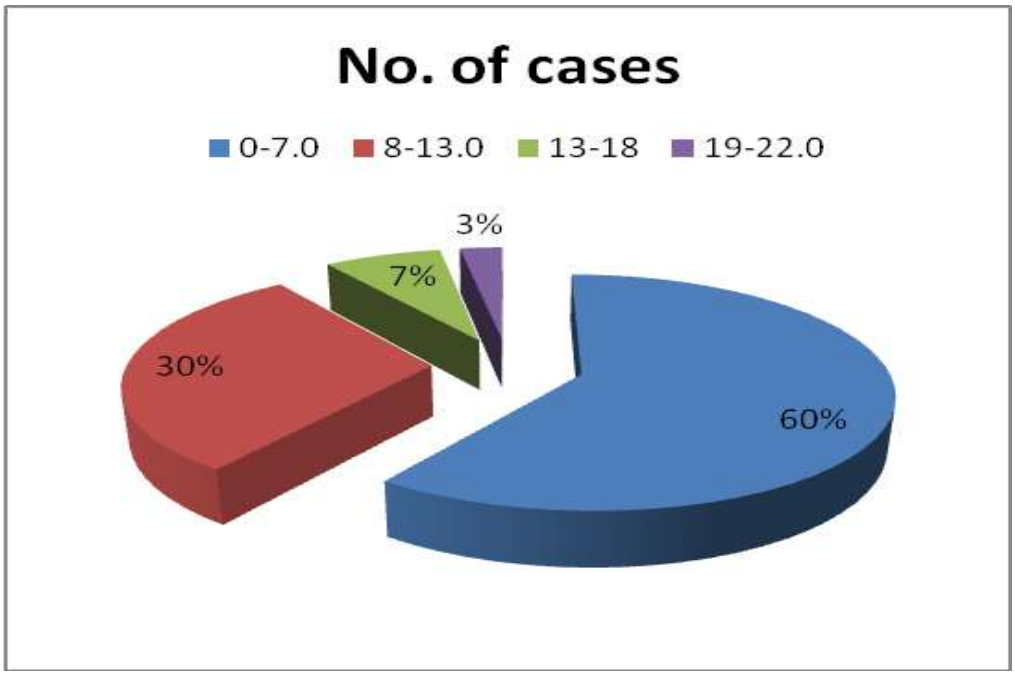

FIGURE 11: DISTRIBUTION OF PATIENTS AS PER SEVERITY OF DEPRESSION ON HAM-D

; Majority had no depression and 10% was comprised of moderate-severe depression

Spearman's rho		TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE	PANSS-POSITIVE SCORE	NEGATIVE SCORE	GENERAL PSYCHO PATHOLOG-ICAL SCORE	HAM-D--TOTAL SCORE	CGI-S – SEVERITY SCORE	QOLS-TOTAL SCORE
AGE (in years)	Correlation Coefficient	0.339	-0.121	-0.190	-0.079	0.287	0.047	-0.045
	p-value	0.001	0.140	0.020	0.334	0.001	0.569	0.587
	N	150	150	150	150	150	150	150

TABLE 12: RELATION OF VARIOUS PARAMETERS OF STUDY WITH RESPECT TO AGE

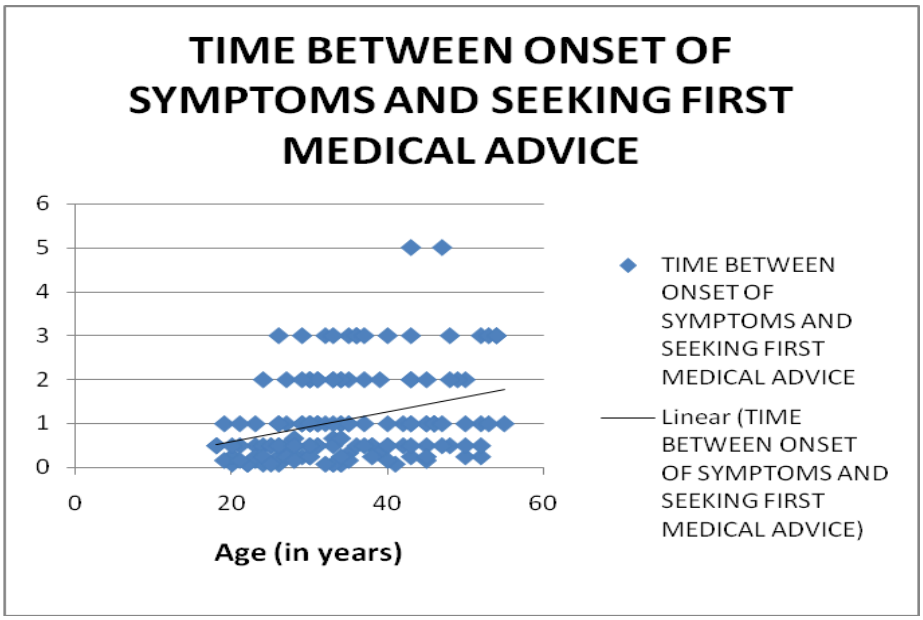

FIGURE 12A: RELATION OF AGE WITH TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE

; Higher the age more was the duration of untreated psychosis

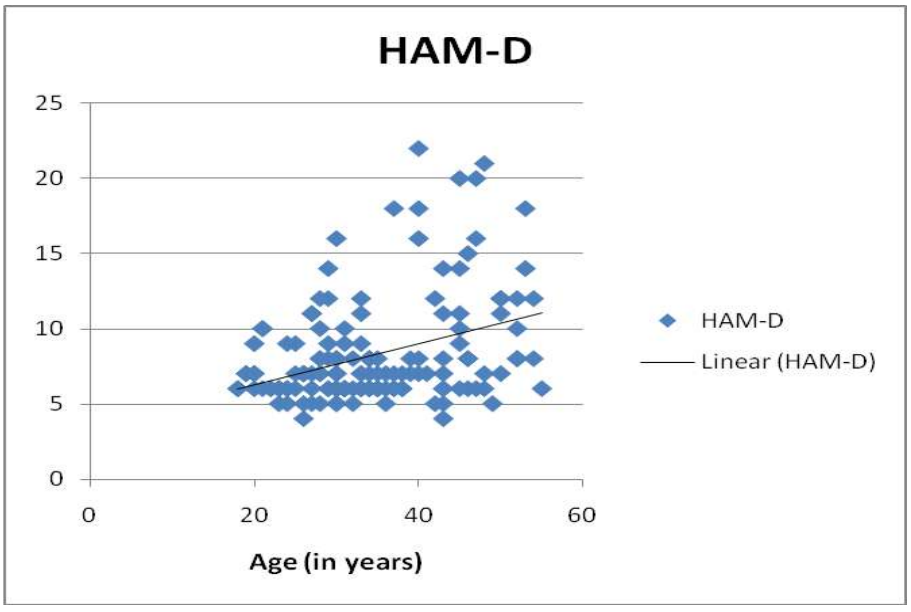

FIGURE 12B: RELATION OF AGE WITH HAM-D SCORES;

More depressive symptoms were found with advancing age

Spearman's rho		AGE OF ONSET OF SCHIZOPHRENIA	TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE	PANSS-POSITIVE SCORE	NEGATIVE SCORE	GENERAL PSYCHO PATHOLOG-ICAL SCORE	HAM-D-TOTAL SCORE	CGI-S – SEVERITY SCORE	QOLS-TOTAL SCORE
DURATION OF ILLNESS (in months)	Correlation Coefficient	0.041	0.485	-0.135	-0.171	-0.152	0.300	-0.054	-0.052
	p-value	0.619	0.001	0.099	0.037	0.063	0.001	0.514	0.524
	N	150	150	150	150	150	150	150	150

TABLE 13: RELATION OF VARIOUS PARAMETERS OF STUDY WITH RESPECT TO DURATION OF ILLNESS

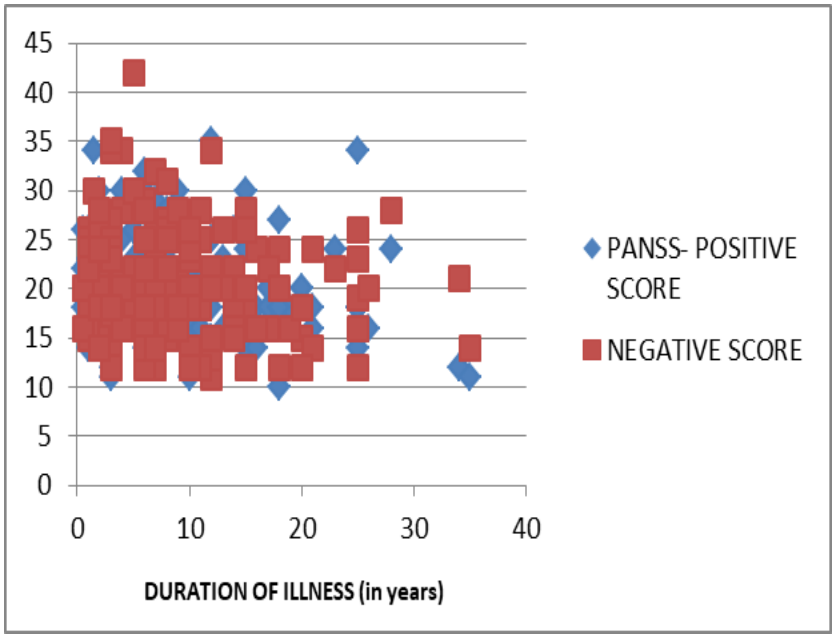

FIGURE 13A: RELATION OF DURATION OF ILLNESS WITH POSITIVE AND NEGATIVE SUBSCALES OF PANSS

; Patients with chronic illness had less negative symptoms

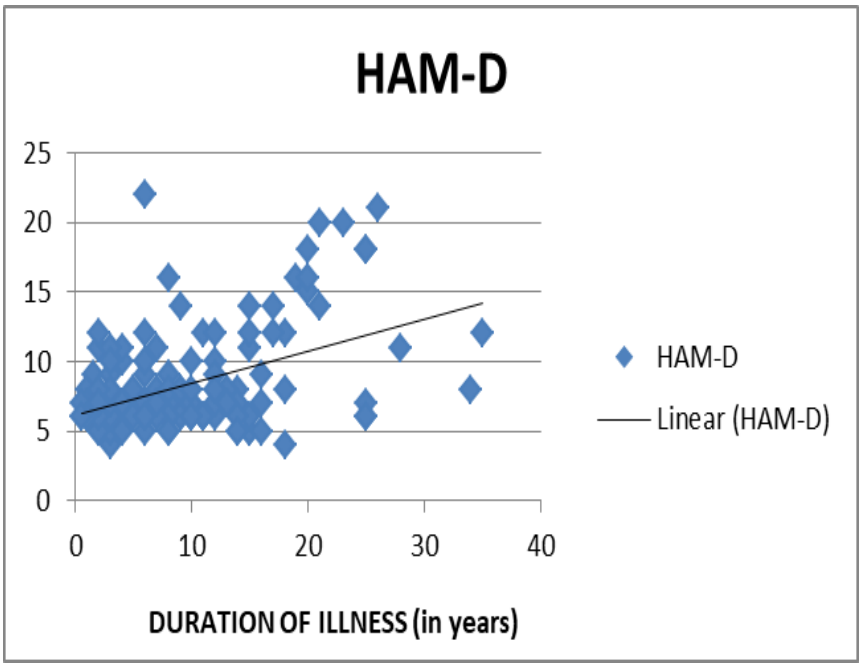

FIGURE 13B: RELATION OF DURATION OF ILLNESS WITH HAM-D SCORES

; Patients with chronic illness were more depressed

Spearman's rho		CGI-S – SEVERITY SCORE	QOLS-TOTAL SCORE
PANSS- POSITIVE SCORE	Correlation Coefficient	0.492	-0.418
	p-value	0.001	0.001
	N	150	150
NEGATIVE SCORE	Correlation Coefficient	0.531	-0.583
	p-value	0.001	0.001
	N	150	150

TABLE 14: RELATION OF PANSS- POSITIVE AND NEGATIVE SUBSCALES WITH SEVERITY OF ILLNESS AND QUALITY OF LIFE

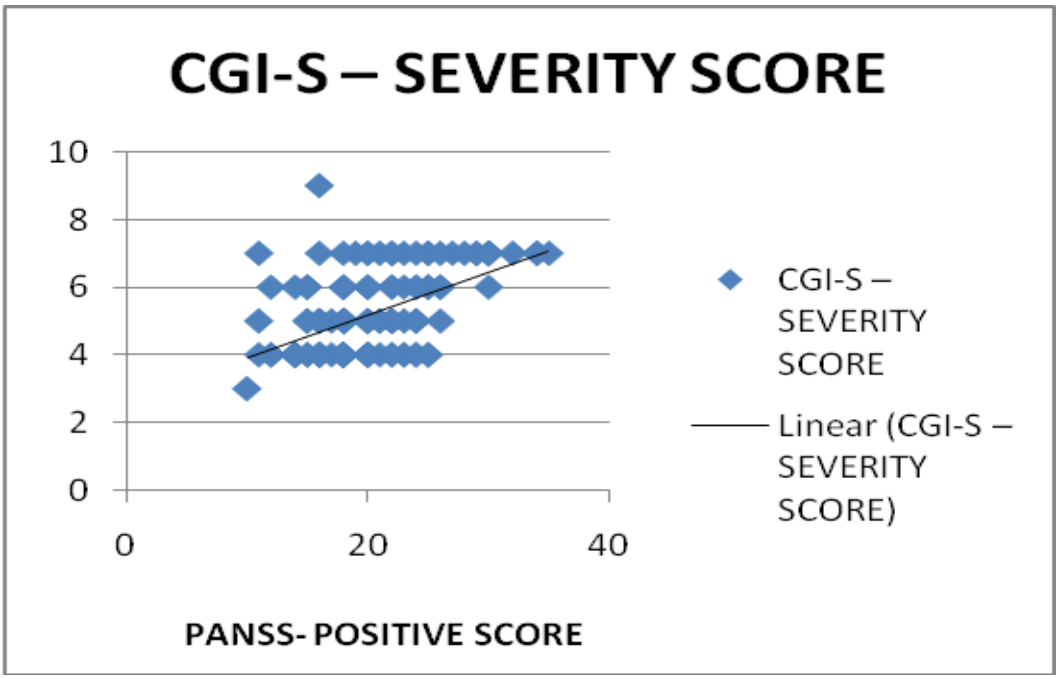

FIGURE 14A: RELATION OF PANSS- POSITIVE SCORES WITH SEVERITY OF ILLNESS

; More positive symptoms indicate higher severity of illness

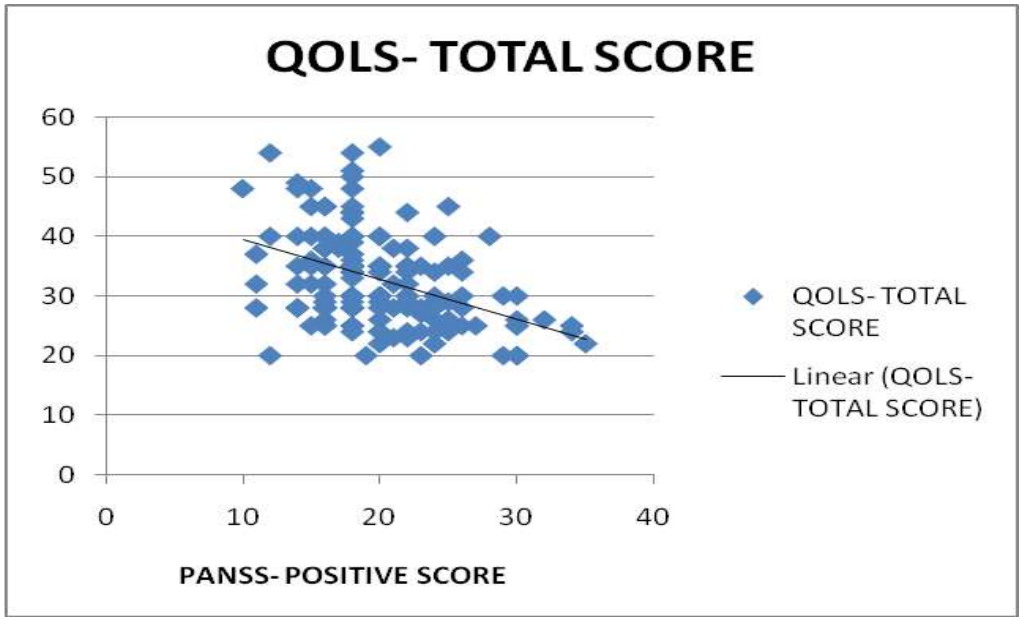

FIGURE 14B: RELATION OF PANSS- POSITIVE SCORES WITH QUALITY OF LIFE

; More positive symptoms indicate poor quality of life

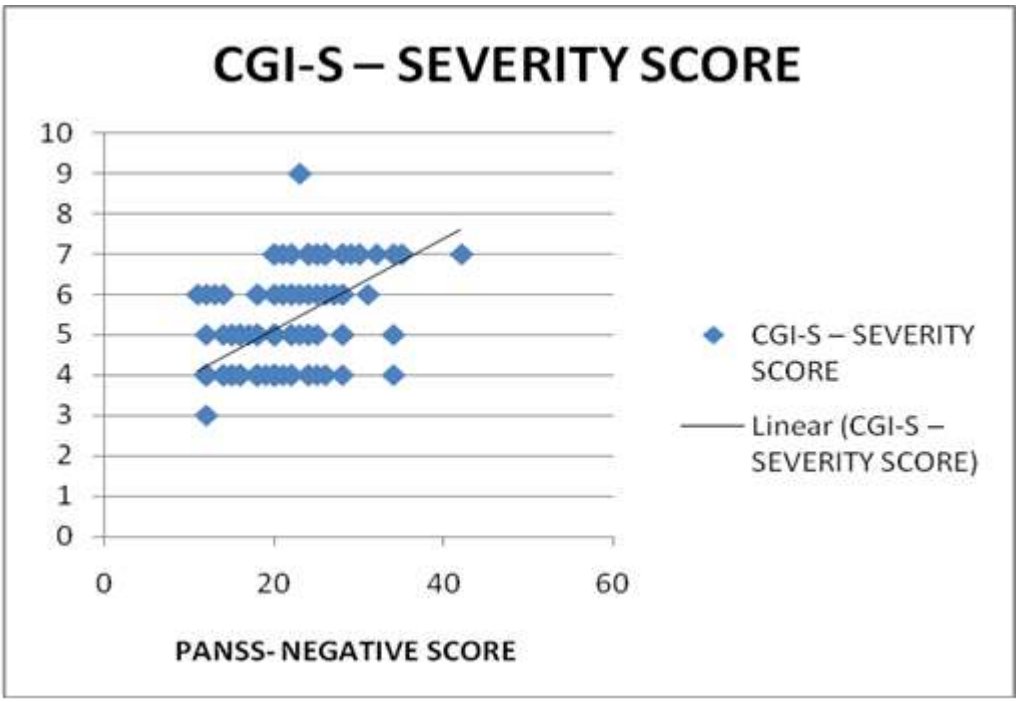

FIGURE 14C: RELATION OF PANSS- NEGATIVE SCORES WITH SEVERITY OF ILLNESS

; More negative symptoms indicate higher severity of illness

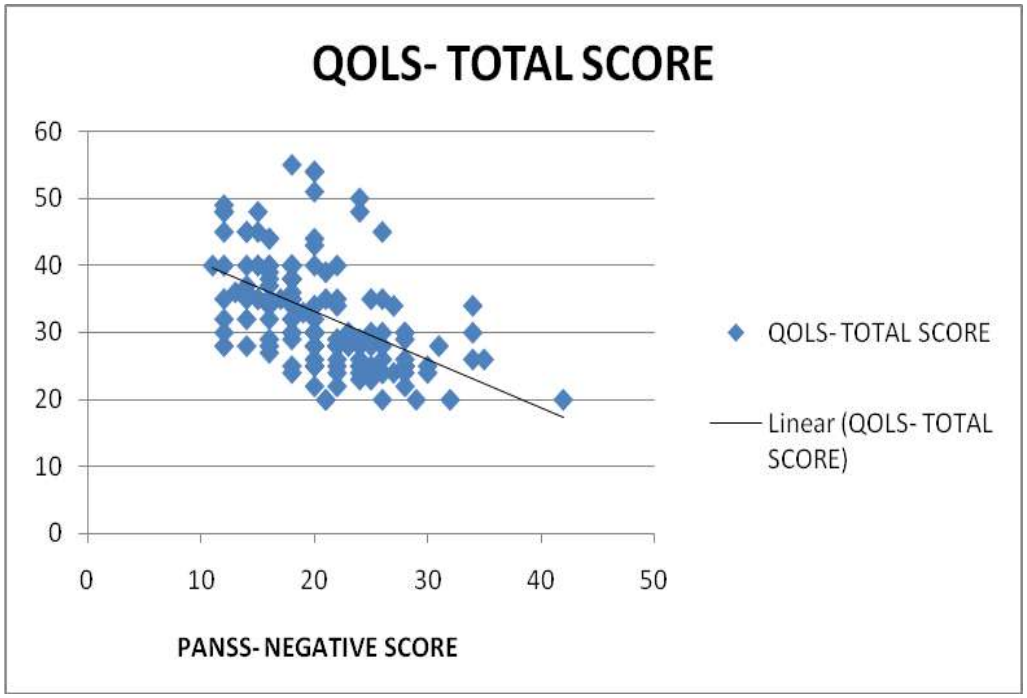

FIGURE 14D: RELATION OF PANSS- NEGATIVE SCORES WITH QUALITY OF LIFE

; More negative symptoms indicate poor quality of life

Spearman's rho		AGE OF ONSET OF SCHIZOPHRENIA	DURATION OF ILLNESS	TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE	PANSS-POSITIVE SCORE	NEGATIVE SCORE	HAM-D--TOTAL SCORE	CGI-S – SEVERITY SCORE	QOLS-TOTAL SCORE
GENERAL PSYCHO PATHOLOGICAL SCORE	Correlation Coefficient	0.053	-0.152	0.062	0.501	0.601	0.195	0.562	-0.544
	p-value	0.519	0.063	0.451	0.001	0.001	0.017	0.001	0.001
	N	150	150	150	150	150	150	150	150

TABLE 15: RELATION OF PANSS- GENERAL PSYCHOPATHOLOGICAL SCORES WITH VARIOUS PARAMETERS OF STUDY

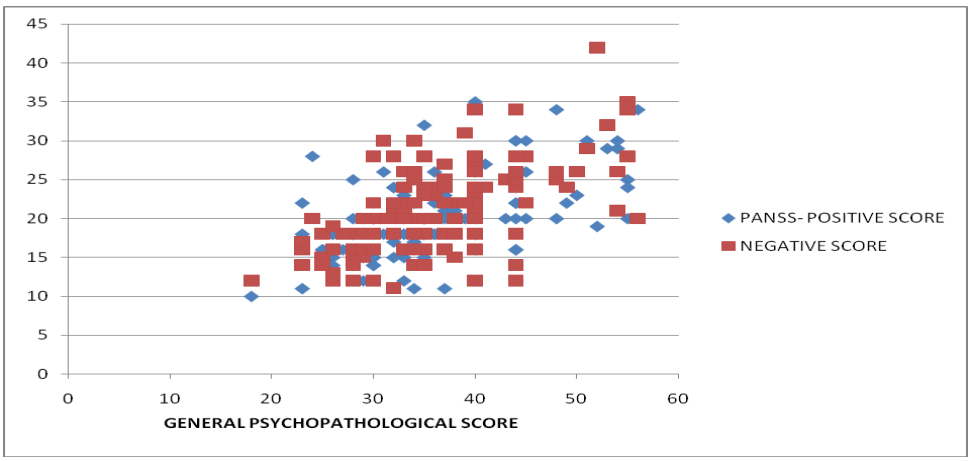

FIGURE 15A: RELATION OF PANSS- GENERAL PSYCHOPATHOLOGICAL SCORES WITH POSITVE AND NEGATIVE SUBSCALE SCORES

; Higher scores on general psychopathology symptoms more were the positive and negative symptoms

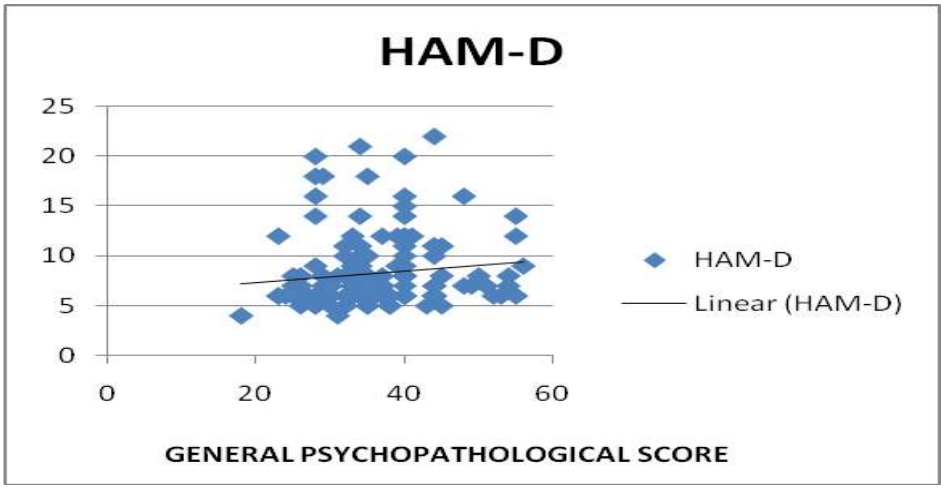

FIGURE 15B: RELATION OF PANSS- GENERAL PSYCHOPATHOLOGICAL SCORES WITH HAM-D SCORES

; With higher scores on general psychopathology symptoms more were the depressive symptoms

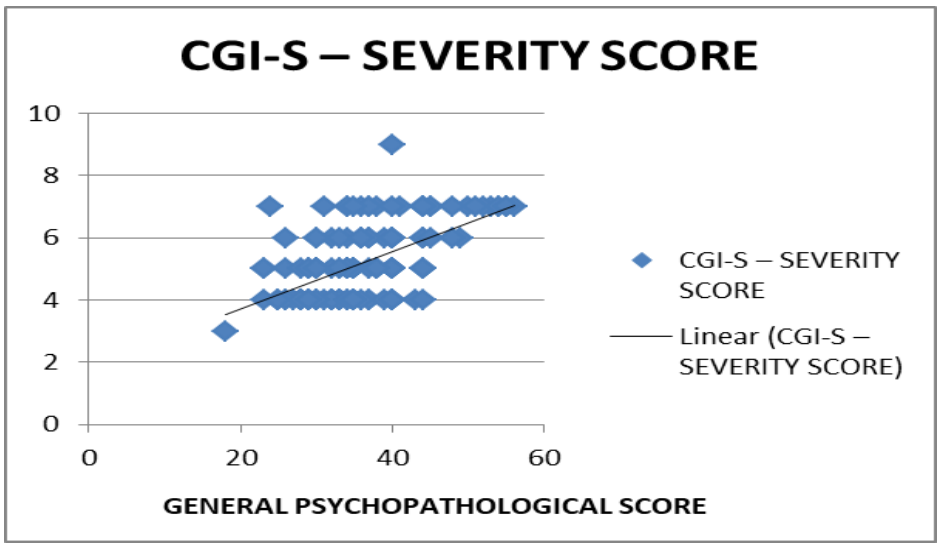

FIGURE 15C: RELATION OF PANSS- GENERAL PSYCHOPATHOLOGICAL SCORES WITH SEVERITY OF ILLNESS

; Higher scores on general psychopathology symptoms indicate higher severity of illness

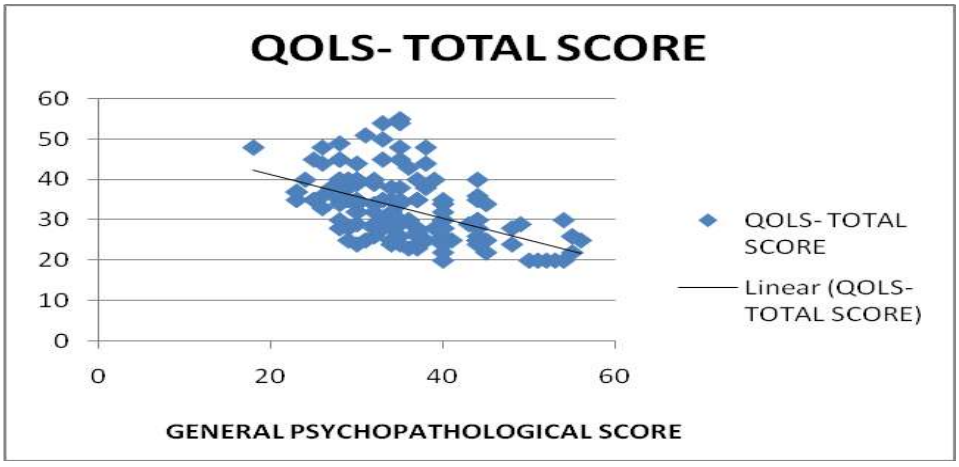

FIGURE 15D: RELATION OF PANSS- GENERAL PSYCHOPATHOLOGICAL SCORES WITH QOL SCORES

; Higher scores on general psychopathology symptoms indicate poor quality of life

Spearman's rho		AGE OF ONSET OF SCHIZOPHRENIA	DURATION OF ILLNESS	TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE	PANSS-POSITIVE SCORE	NEGATIVE SCORE	GENERAL PSYCHOPATHOLOGICAL SCORE
HAM-D-- TOTAL SCORE	Correlation Coefficient	0.058	0.300	0.166	0.040	-0.003	0.195
	p-value	0.482	0.001	0.043	0.627	0.975	0.017
	N	150	150	150	150	150	150

TABLE 16: RELATION OF HAM-D SCORES WITH AGE OF ONSET, DURATION OF ILLNESS, TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING MEDICAL ADVICE ALONG WITH SUBSCALES ON PANSS

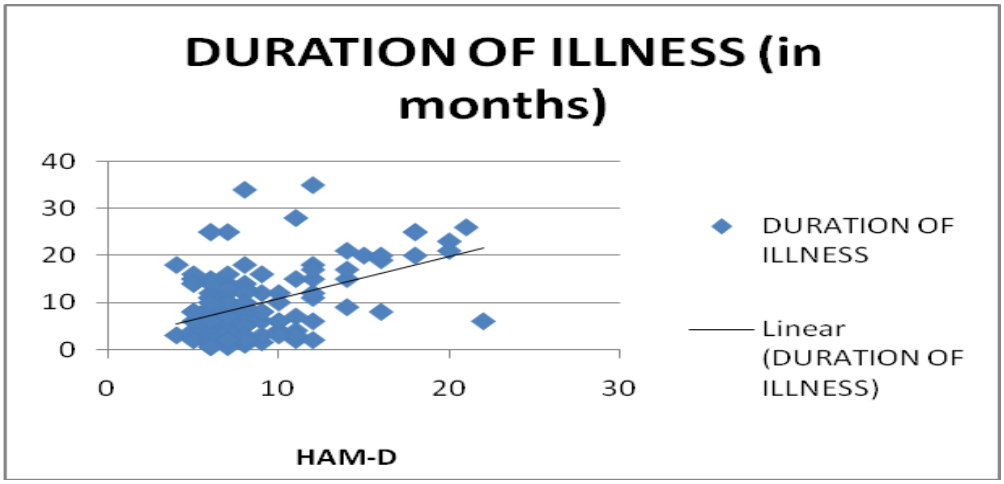

FIGURE 16A: RELATION OF HAM-D SCORES WITH DURATION OF ILLNESS ; Depression severity directly correlates with duration of illness in patients with schizophrenia

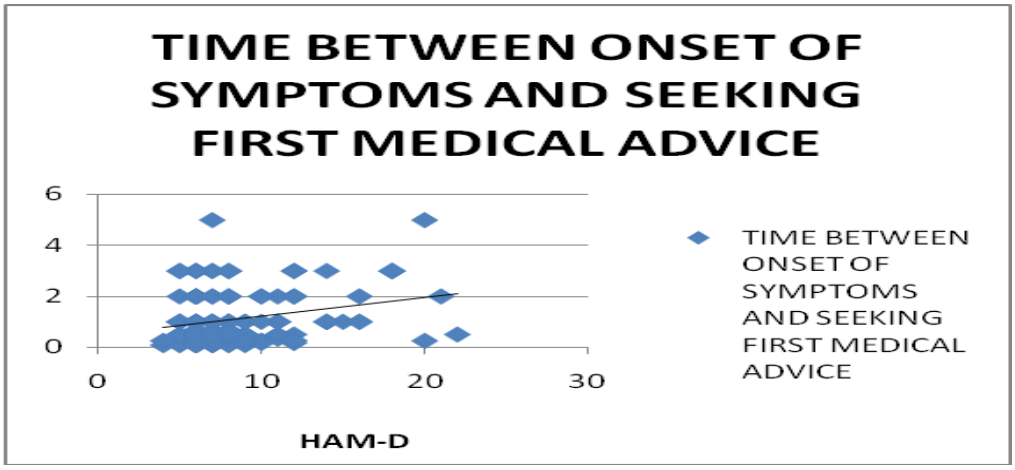

FIGURE 16B: RELATION OF HAM-D SCORES WITH TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING MEDICAL ADVICE ; More depressive symptoms were found in patients with longer duration of untreated illness

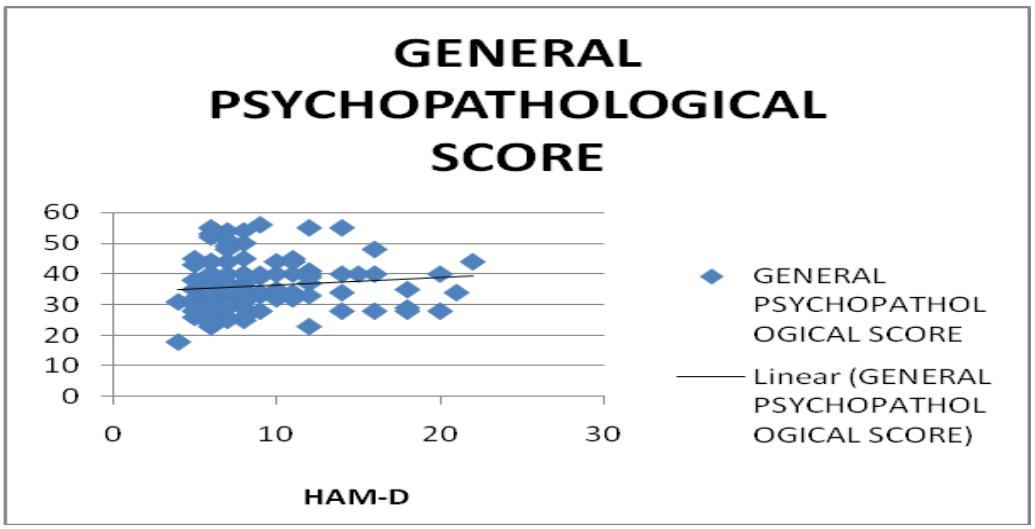

FIGURE 16C: RELATION OF HAM-D SCORES WITH GENERAL PSYCHOPATHOLOGY SUBSCALE SCORES-PANSS

; More the depressive symptoms, higher was the score on general psychopathology subscale of PANSS

Spearman's rho		CGI-S – SEVERITY SCORE	QOLS-TOTAL SCORE
HAM-D-- TOTAL SCORE	Correlation Coefficient	0.116	-0.362
	p-value	0.159	0.001
	N	150	150

TABLE 17: RELATION OF HAM-D SCORES WITH SEVERITY OF ILLNESS AND QUALITY OF LIFE

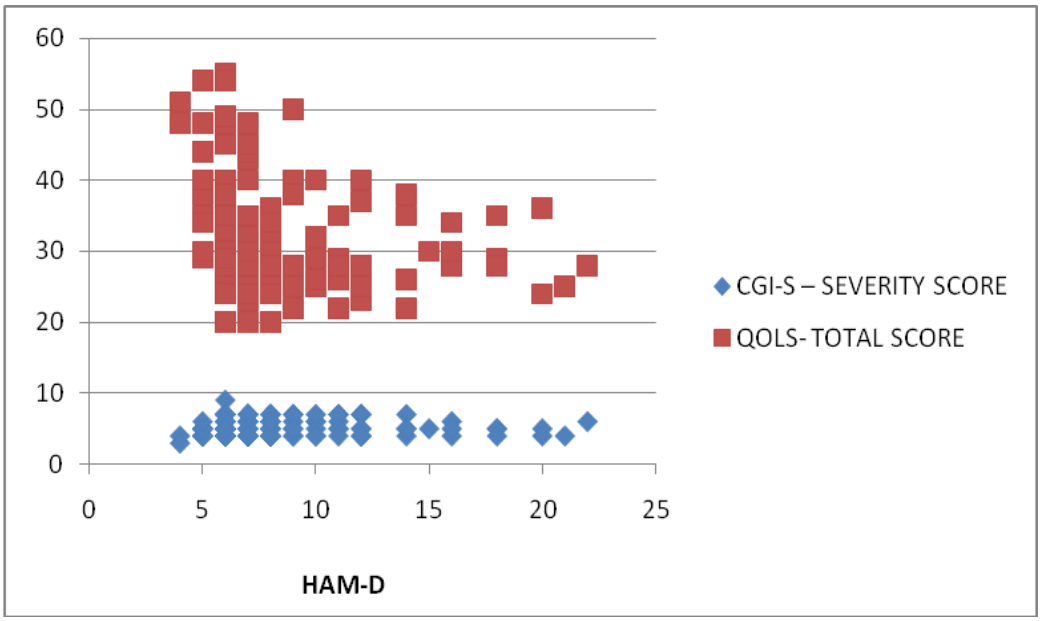

FIGURE 17: RELATION OF HAM-D SCORES WITH SEVERITY OF ILLNESS AND QUALITY OF LIFE

; Higher the severity of depression, poorer the quality of life

Spearman's rho		AGE OF ONSET OF SCHIZOPHRENIA	DURATION OF ILLNESS	TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE	PANSS-POSITIVE SCORE	NEGATIVE SCORE	GENERAL PSYCHOPATHOLOGICAL SCORE	HAM-D--TOTAL SCORE	CGI-S – SEVERITY SCORE
QOLS- TOTAL SCORE	Correlation Coefficient	0.026	-0.052	-0.107	-0.418	-0.583	-0.544	-0.362	-0.561
	p-value	0.755	0.524	0.193	0.001	0.001	0.001	0.001	0.001
	N	150	150	150	150	150	150	150	150

TABLE 18: RELATION OF QUALITY OF LIFE WITH VARIOUS PARAMETERS OF STUDY

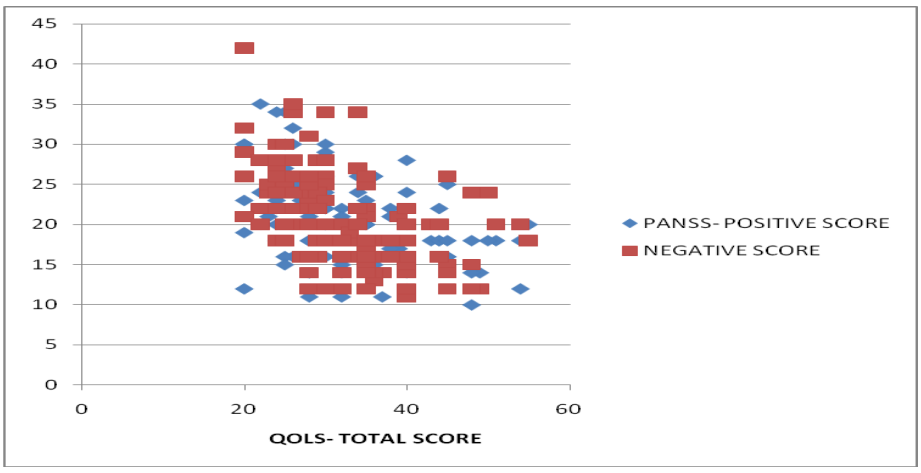

FIGURE 18A: RELATION OF QUALITY OF LIFE WITH POSITIVE AND NEGATIVE SUBSCALES OF PANSS

; Higher the positive and negative symptoms of schizophreina, poorer the quality of life

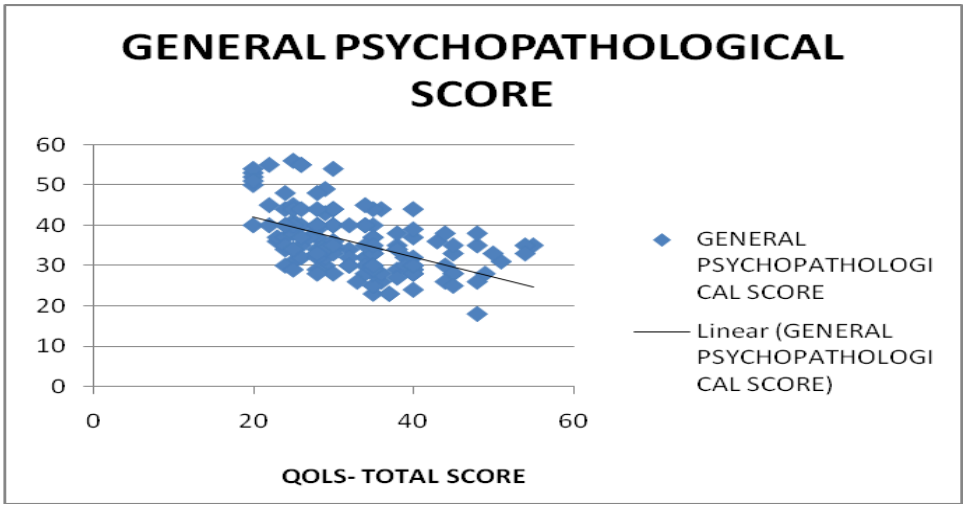

FIGURE 18B: RELATION OF QUALITY OF LIFE WITH GENERAL PSYCHOPATHOLOGY SUBSCALE OF PANSS

; Higher the general psychopathology symptoms of schizophreina, poorer the quality of life

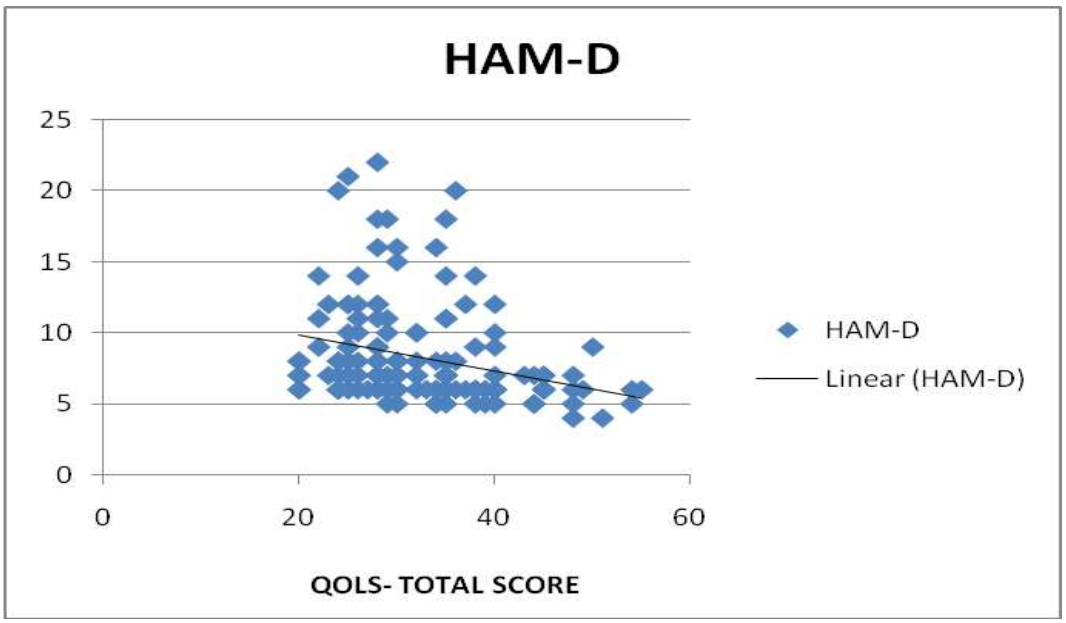

FIGURE 18C: RELATION OF QUALITY OF LIFE WITH HAM-D SCORES ; Severe the depression poorer the quality of life

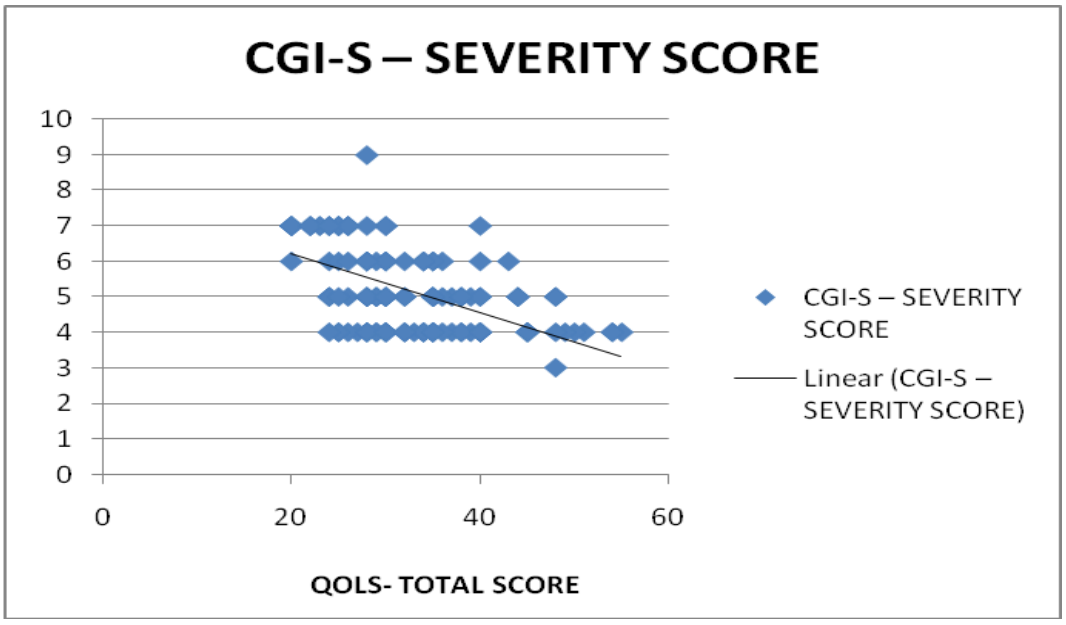

FIGURE 18D: RELATION OF QUALITY OF LIFE WITH SEVERITY OF ILLNESS ; Higher the severity of illness, poorer the quality of life

Spearman's rho		AGE OF ONSET OF SCHIZOPHRENIA	DURATION OF ILLNESS	TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE	PANSS-POSITIVE SCORE	NEGATIVE SCORE	GENERAL PSYCHO PATHOLOGICAL SCORE	HAM-D—TOTAL SCORE	QOLS-TOTAL SCORE
CGI-S – SEVERITY SCORE	Correlation Coefficient	0.123	-0.054	0.061	0.492	0.531	0.562	0.116	-0.561
	p-value	0.133	0.514	0.458	0.001	0.001	0.001	0.159	0.001
	N	150	150	150	150	150	150	150	150

TABLE 19: RELATION OF CGI SEVERITY SCORING WITH VARIOUS PARAMETERS OF STUDY

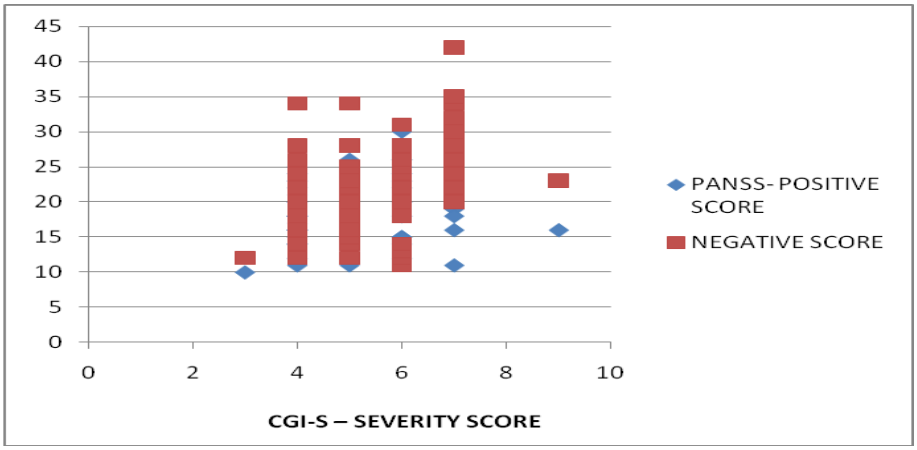

FIGURE 19A: RELATION OF CGI SEVERITY SCORING WITH POSITIVE AND NEGATIVE SUBSCALES OF PANSS

; Illness severity was higher in patients with higher scores on positive and negative subscales of PANSS

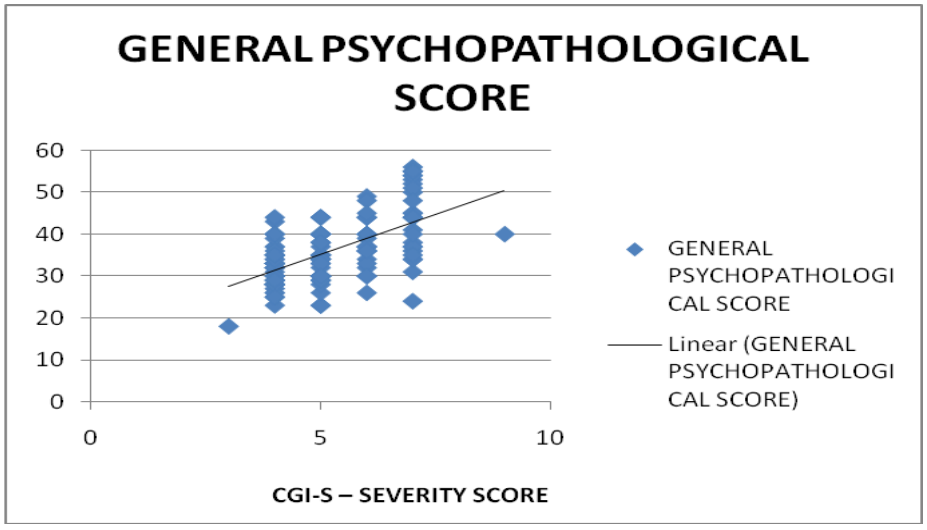

FIGURE 19B: RELATION OF CGI SEVERITY SCORING WITH GENERAL PSYCOPATHOLGY SUBSCALE OF PANSS

; Illness severity was higher in patients with higher scores on general psychopathology subscale of PANSS

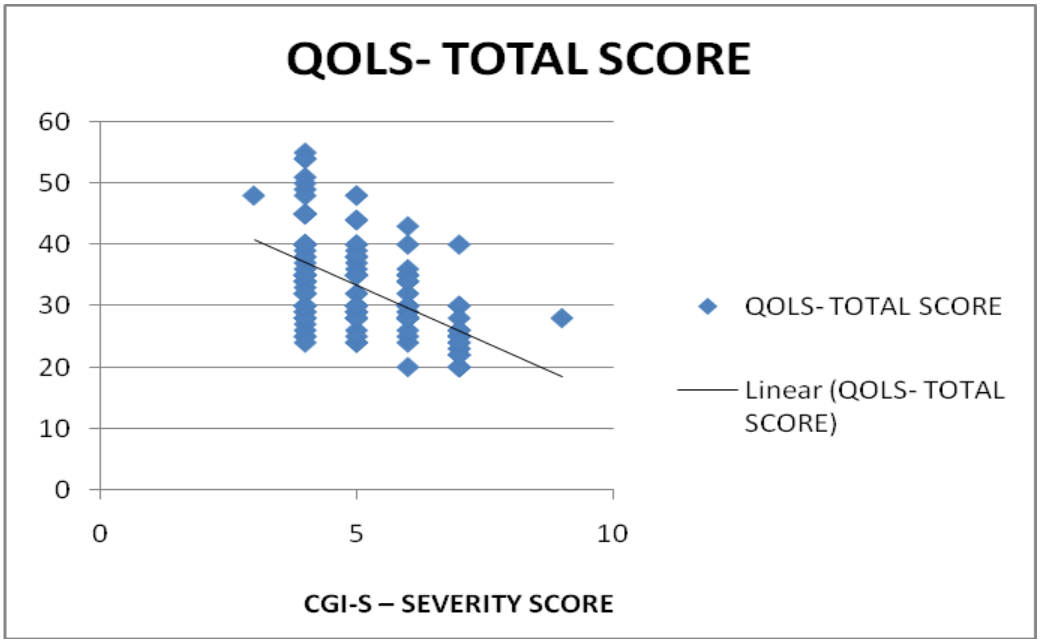

FIGURE 19C: RELATION OF CGI SEVERITY SCORING WITH QUALITY OF LIFE ; Higher the severity of illness, poorer the quality of life

	MARRIED		UNMARRIED		Z	p-value
	Mean	SD	Mean	SD		
PANSS- POSITIVE SCORE	19.14	4.52	20.74	4.99	-1.988	0.049
NEGATIVE SCORE	18.92	5.18	22.12	5.51	-3.524	0.001
GENERAL PSYCHOPATHOLOGICAL SCORE	33.92	7.55	36.92	7.45	-2.358	0.020
HAM-D-- TOTAL SCORE	8.65	3.98	7.23	1.96	2.726	0.007
CGI-S – SEVERITY SCORE	4.98	1.13	5.35	1.20	-1.855	0.066
QOLS- TOTAL SCORE	34.47	8.02	31.82	7.75	1.983	0.049

TABLE 20: RELATION OF MARITAL STATUS WITH VARIOUS PARAMETERS OF STUDY

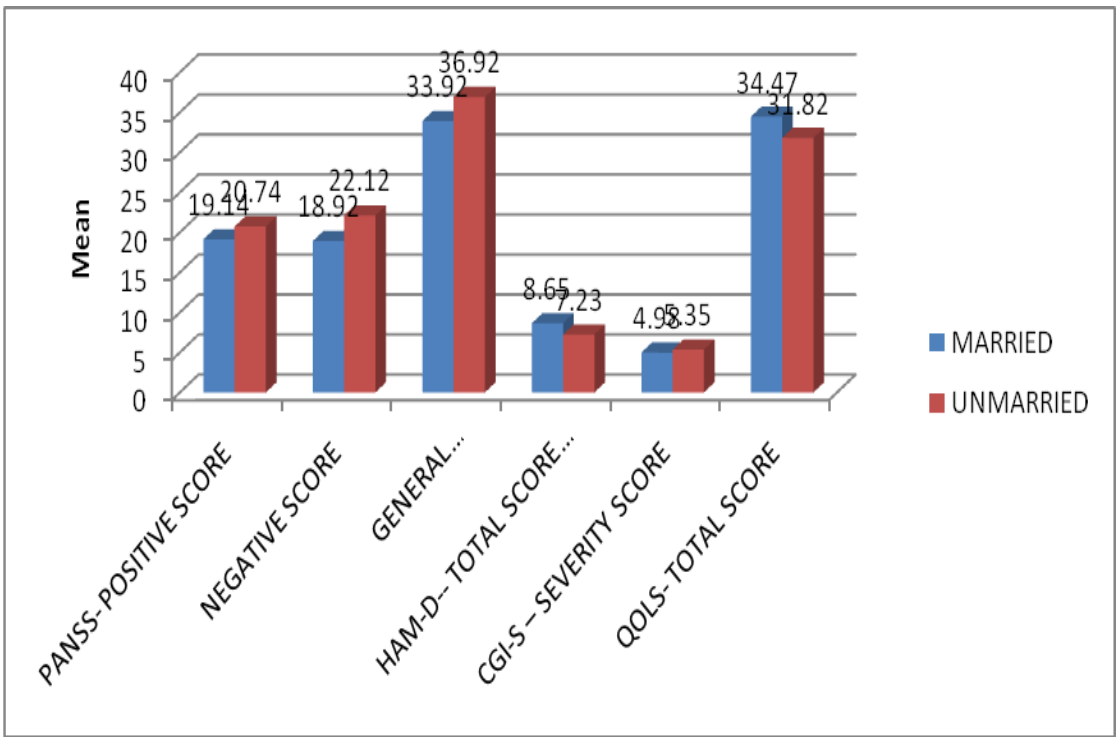

FIGURE 20: RELATION OF MARITAL STATUS WITH VARIOUS PARAMETERS OF STUDY

; Married patients were found to have lower severity of illness and better quality of life than the unmarried patients

COMPLAINCE	NO		YES		Z	p-value
	Mean	SD	Mean	SD		
PANSS- POSITIVE SCORE	23.38	5.17	18.71	4.18	5.730	0.001
NEGATIVE SCORE	24.74	5.44	18.94	4.66	6.522	0.001
GENERAL PSYCHOPATHOLOGICAL SCORE	41.10	8.57	33.78	6.01	5.903	0.001
HAM-D-- TOTAL SCORE	7.55	2.14	8.52	3.97	-1.501	0.136
CGI-S – SEVERITY SCORE	6.19	0.92	4.79	1.01	7.808	0.001
QOLS- TOTAL SCORE	27.64	5.81	34.67	7.69	-5.350	0.001

TABLE 21: RELATION OF COMPLIANCE WITH VARIOUS PARAMETERS OF STUDY

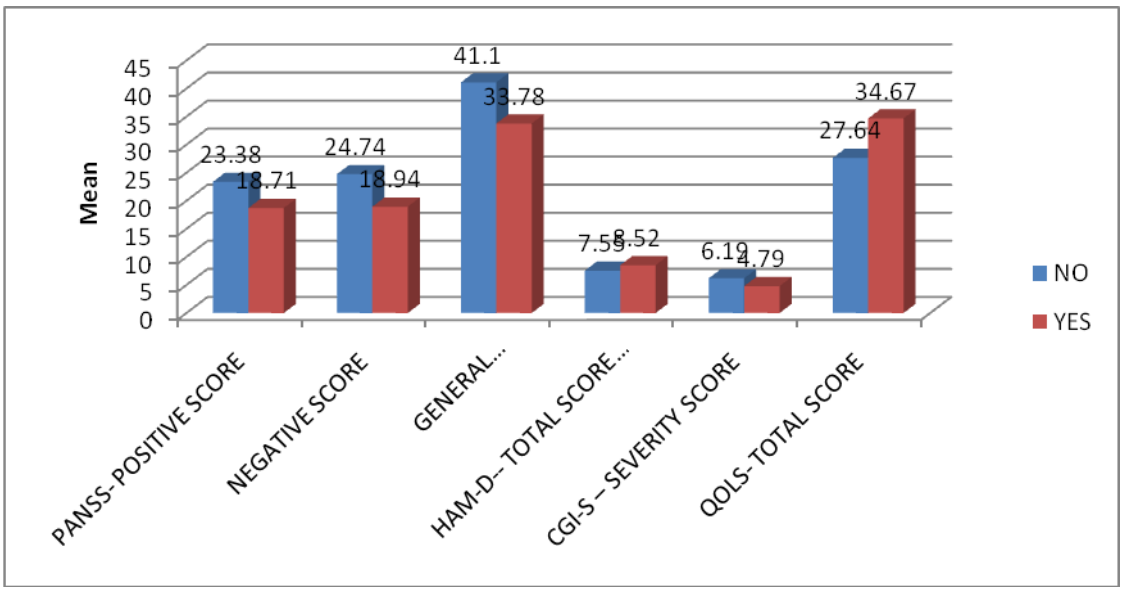

FIGURE 21: RELATION OF COMPLIANCE WITH VARIOUS PARAMETERS OF STUDY

; Patients who were compliant to medications showed lower scores on PANSS, CGI-S and had better quality of life

		CSSRS- SUICIDAL IDEATION				Total	chi-square value	p-value
HAM-D		NO	NO	YES	YES			
	0-7.0	90	61.64%	0	0.00%	90	48.428	0.001
	8-13.0	45	30.82%	0	0.00%	45		
	13-18	9	6.16%	2	50.00%	11		
	19-22.0	2	1.37%	2	50.00%	4		
Total		146	100.00%	4	100.00%	150		

TABLE 22: RELATION OF HAM-D SCORES WITH SUICIDAL IDEATION

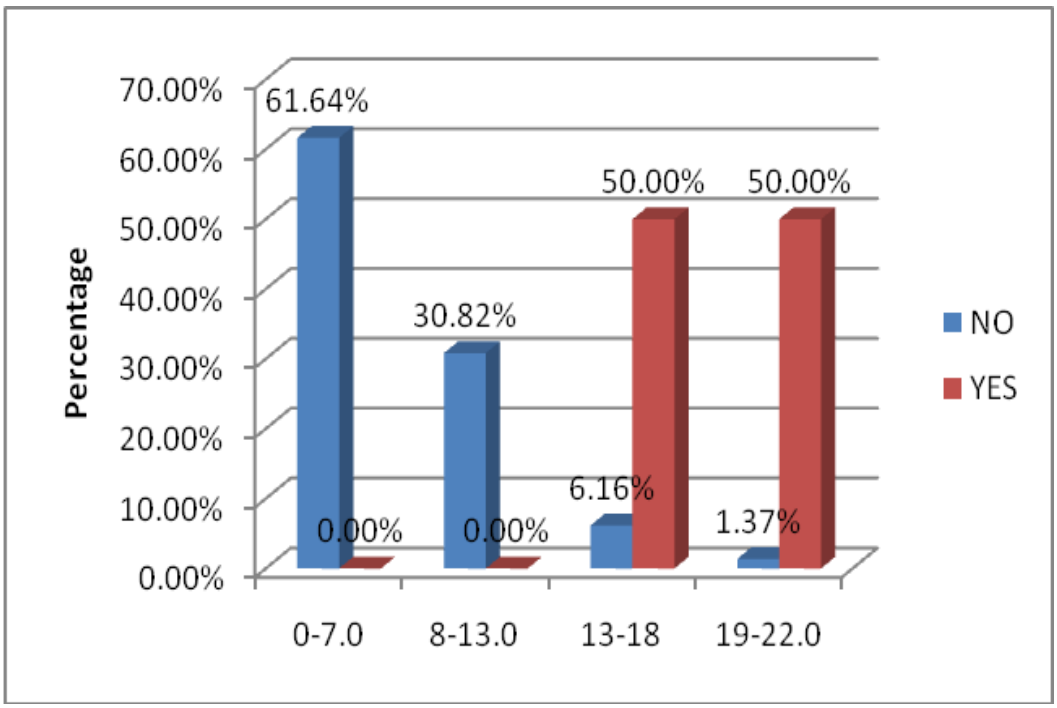

FIGURE 22: RELATION OF HAM-D SCORES WITH SUICIDAL IDEATION

; HAM-D scores significantly correlated with patients having suicidal ideations.

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum	F	p-value
	HAM-D					Lower Bound	Upper Bound				
QOLS- TOTAL SCORE	0-7.0	90	34.76	8.379	.883	33.00	36.51	20	55	5.707	0.001
	8-13.0	45	29.53	6.189	.923	27.67	31.39	20	50		
	13-18	11	30.45	4.655	1.404	27.33	33.58	22	38		
	19-22.0	4	28.25	5.439	2.720	19.60	36.90	24	36		
	Total	150	32.70	7.860	.642	31.43	33.97	20	55		

TABLE 23: RELATION OF QOL SCORES WITH HAM-D SCORES

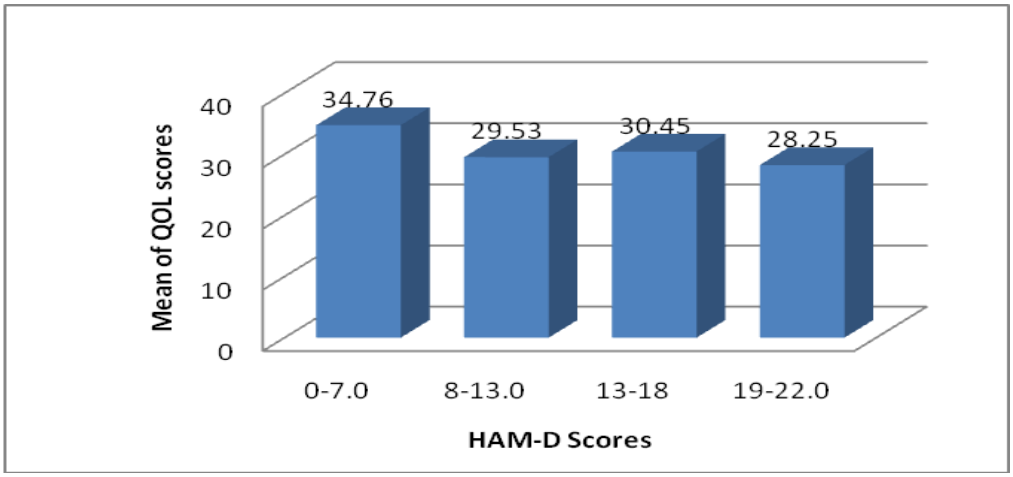

FIGURE 23: RELATION OF QOL SCORES WITH HAM-D SCORES ; Patients who had severe depression were found to have lowest mean (28.25±5.43) on QOL scale

CSSRS- SUICIDAL IDEATION	NO		YES		Z	p-value
	Mean	SD	Mean	SD		
PANSS- POSITIVE SCORE	20.09	4.97	17.50	3.00	1.035	0.302
NEGATIVE SCORE	20.62	5.55	18.50	5.07	0.754	0.452
GENERAL PSYCHOPATHOLOGICAL SCORE	35.75	7.53	38.75	8.77	-0.784	0.434
HAM-D	7.95	3.09	19.25	2.75	-7.241	0.001
CGI-S – SEVERITY SCORE	5.18	1.18	5.25	0.96	-0.121	0.904
QOLS- TOTAL SCORE	32.80	7.92	29.00	4.24	0.954	0.342

TABLE 24: RELATION OF SUICIDAL IDEATION WITH PANSS, HAM-D, CGI-S AND QOLS

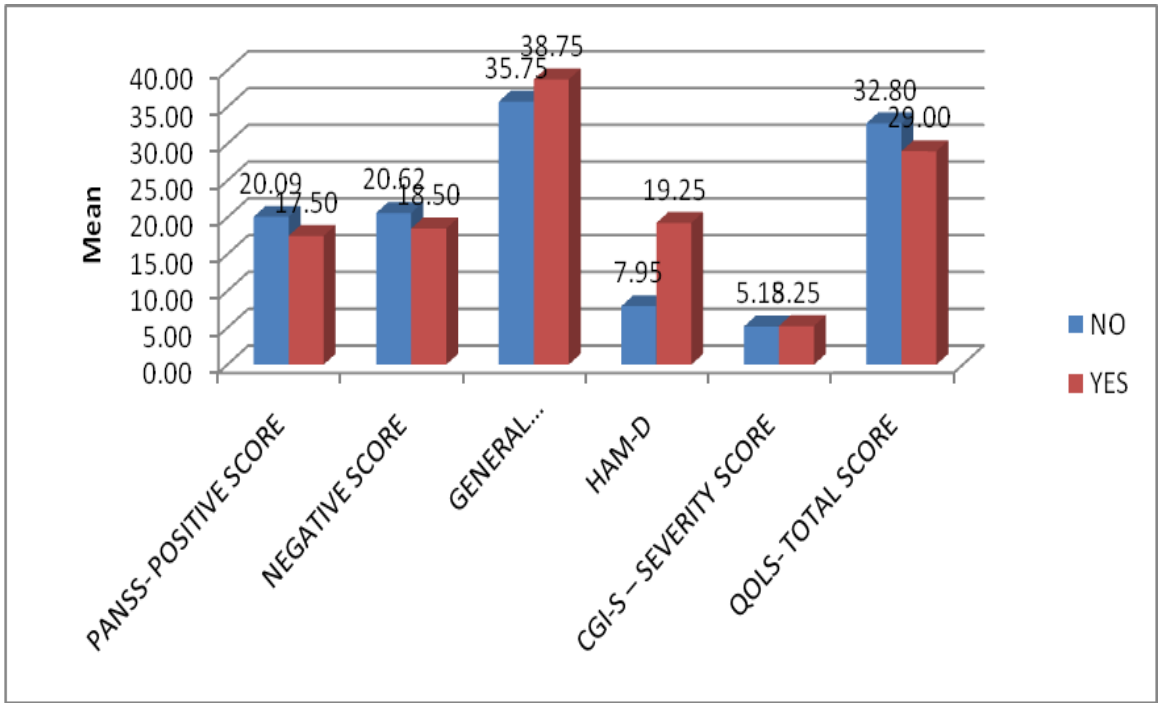

FIGURE 24: RELATION OF SUICIDAL IDEATION WITH PANSS, HAM-D, CGI-S AND QOLS

; Presence of suicidal ideations was directly related to severity of depression

RESULTS

The study was conducted in 150 patients of schizophrenia enrolled from department of psychiatry in DMC&H, Ludhiana. The data thus collected was tabulated and after analyzing, following results were obtained.

Socio-demographic variables in patients of schizophrenia:

Table 1 and figure 1 shows age wise distribution of patients of schizophrenia. Out of 150 patients, 40% (n=60) belonged to age group younger than 30 year old, followed by 32.7% (n=49) in age group of 30-40 years and rest 27.3% (n=41) fell in age group older than 40 years. The mean age of patients of schizophrenia enrolled in the study was 34.5 years

Table 2 and figure 2 shows that out of 150 patients, 57.3% (n=86) were males and 42.7% (n=64) were females.

Table 3 shows distribution of patients with respect to their marital status. Out of total 44% (n=66) were married and rest 56% (n=84) were single who were further categorized into unmarried (49%), widow (0.7%) or divorced (6%) as depicted in figure 3.

Table 4 and figure 4 shows distribution of patients with respect to education. In our study, most of patients of schizophrenia i.e. 70% had high school education, 20% patients were graduates and 5.3% had undergone post-graduation. Rest only 4.7% were illiterate.

Table 5 and figure 5 shows distribution of patients of schizophrenia according to occupational status. Only 21(14%) patients out of 150 were employed and majority 129 (86%) was unemployed.

Table 6 shows distribution of patients of schizophrenia according to residential occupancy. 58% resided in rural areas whereas 42% of patient belonged to urban areas as depicted in figure 6.

Table 7 and figure 7 shows distribution of patients of schizophrenia according to type of family. Out of 150, 78 (52%) patients lived in joint family and 72 (48%) patients belonged to nuclear families.

Table 8 and figure 8 shows distribution of patients of schizophrenia with respect to compliance. It was found that out of 150, 108 (72%) patients maintained compliance to medications whereas 42 (28%) were non compliant.

Table 9 shows distribution of patients of schizophrenia with respect to nicotine use. It was found that 38.7 % patients had comorbid nicotine use as depicted in figure 9.

Table 10 and figure 10 shows distribution of patients with respect to presence of suicidal ideation. Only 2.7% patients of schizophrenia reported suicidal ideations and majority (97.3%) patients did not report any suicidal ideations.

Table 11 and figure 11 shows distribution of patients as per severity of depression on HAM-D. Majority (60%) of the patients of schizophrenia were found to have no depression whereas 30% of the patients were found to have mild depression. 7.3% patients were found to have moderate depression while only 2.7% patients reported severe depression. None of them fell in the category of very severe depression (score >23) in our study.

Correlations of various parameters used in the study for patients of schizophrenia:

Table 12 shows relation of various parameters of study with respect to Age. Positive correlation was found between age of the patient and time between onset of symptoms and seeking medical advice along with HAM-D scores. This indicates that with advancing age, the patients of schizophrenia who also had longer duration of untreated

psychosis were found to be more depressed. These findings were significant ($p<0.05$). As the age increased the severity of illness also increased and the quality of life decreased, although the findings were not significant. Figures 12a and 12b figures show scatter plot diagram for parameters of duration of untreated psychosis and HAM-D scoring respectively, showing significant positive correlation with respect to age of patients of schizophrenia.

Table 13 shows relation of various parameters of study with respect to duration of illness. Positive correlation was found between duration of illness and HAM-D total scoring (figure 13b). However the duration of illness was found to have negative correlation (i.e. inversely related) with the positive, negative (figure 13a) and general psychopathological symptom subscale of PANSS along with CGI-S and QOL scores. Thus indicating longer the duration of illness, higher is the depression found and lower is the quality of life in patients of schizophrenia.

Table 14 shows relation of PANSS- positive and negative scores with severity of illness and quality of life. Both positive and negative scores of PANSS had positive correlation with the severity of illness (figure 14a and 14c) whereas had negative correlation with quality of life (figure 14b and 14d) as found with lower scores on QOL scale indicating poor quality of life.

Table 15 shows relation of PANSS- general psychopathological scores with various parameters of study. We found in our study that the scores of general psychopathology subscale positively correlate with positive and negative subscale scores of PANSS (figure 15a) along with score of HAM-D (figure 15b) and CGI-S (figure 15c) severity scoring. It shows negative correlation with scoring on QOLS which was significant ($p<0.05$) as seen on scatter diagram in figure 15d. Non-significant negative correlations were found with duration of illness.

Table 16 and table 17 shows relation of HAM-D scores with various parameters of the study. Significant findings($p<0.05$) i.e. positive correlation was seen with the duration of illness (figure 16a), time between onset of symptoms and seeking medical advice (figure 16b) along with general psychopathology symptom scoring on PANSS (figure 16c) whereas non-significant findings were seen on positive and negative symptom scoring. It was also found that the HAM-D scores had negative correlation with scores on QOL scale and the findings were significant ($p<0.05$) as depicted in figure 17.

Table 18 shows relation of quality of life with various parameters of study. It was found to be negatively correlated with PANSS (figure 18a and 18b), HAM-D (figure 18c) and CGI-S scales (figure 18d) i.e. higher the scores on these rating scales, lower the quality of life. All the findings were significant ($p<0.05$). Quality of life was not found to be significantly related with the age of onset of schizophrenia, the duration of illness and time between onset of symptoms and seeking first medical advice.

Table 19 shows relation of CGI severity scoring with various parameters. CGI severity scores positively correlated with all three subscales of PANSS as depicted in scatter diagrams shown in figure 19a and 19b whereas was negatively related with QOL scale as seen in figure 19c.

Table 20 and figure 20 shows relation of marital status with various parameters of study. Unmarried patients of schizophrenia with mean score of 20, 22, 36 on positive, negative and general psychopathological symptoms scale respectively exhibited negative correlation. Unmarried status of the patient positively correlated with HAM-D (mean=7.23) and QOL scale (mean=31.2) scoring significantly ($p<0.05$) as compared to married patients who had mean scores as 8.65 and 34.47 on HAM-D and QOL scores respectively.

Table 21 shows relation of compliance with various parameters of the study. Compliance was positively correlated with PANSS's positive, negative and general psychopathological symptoms scoring along with CGI severity scoring as lower scores with mean of 18.71, 18.44, 33.78 and 4.79 respectively whereas patients who were non-compliant to medication showed higher mean scores on these scales as also depicted in figure 21.

Table 22 and figure 22 shows relation of HAM-D scores with suicidal ideation as on C-SSRS scale. Majority of the patients (61%) who did not have suicidal ideations as on C-SSRS were also found to have no depression on HAM-D rating scale. Half of the patients (50%) with suicidal ideations were found to have moderate depression and rest 50% of the patients had severe depression. The findings were significantly correlated ($p<0.05$). None of the patients in our study were found to have very severe depression.

Table 23 and figure 23 shows relation of QOL scores with HAM-D scores. It was found that majority of the patients who were found to have no depression had the highest mean of 34.76±8.37 on QOL assessment, whereas those patients who had severe depression were found to have lowest mean (28.25±5.43) on QOL assessment. The findings of HAM-D and QOL had positive correlation and statistically significant ($p<0.05$) as seen in table 23.

Table 24 and figure 24 shows relation of suicidal ideation with PANSS, HAM-D, CGI-S and QOLS. It was found that patients who had suicidal ideations had higher mean value on general psychopathological symptoms scale (mean 38.75±8.77); HAM-D scale (mean 19.25±2.75) and CGI severity scale (mean 6.5±0.58). The findings were significant ($p<0.05$) with HAM-D scores indicating there was direct correlation between suicidal ideation and severity of depression.

DISCUSSION

This study consisted of 150 patients diagnosed with schizophrenia. The mean age of patients in our study was 34.55 ± 9.35 years with age ranging between 18-55 years. 40% of the patients enrolled were less than 30 years of age. This age range has been described in various studies such as by Gozdzik-zelazny et al. 2018 where mean age was 41.6 ±11.0 years with age range included was 23-59 years. Thus most patients belonged to young and middle age group attributing it to this group of population frequently visiting the hospital.

As per Assen et. Al. (2000), each successive developmental stage seems to imprint differently the presenting clinical symptomatology, resulting in a predominance of non-specific psychotic symptoms in age groups 15–24; of delusions of reference and affective symptoms in age 25–34; and of persecutory delusions and negative symptoms in age 35–59.[66] In our study we found that patients <30 years of age and age group of 31-40 years had similar but slightly higher positive subscale mean score (20.32 and 20.44 respectively) than in patients with 40 years and older however negative symptoms score on PANSS was higher in age group <30 years with mean 21.90± 5.62 which was not concordant with the available literature although the findings were not significant ($p>0.05$), hence the findings could not be emphasized upon. Patients enrolled in our study were 57.3% males as compared to females (42.7%). McGrath et al. 2008 also found no significant difference between males and females.[64] Dai, J., et al. 2017, had similar findings.[23] Lewine RR et al., gave the timing model which states that schizophrenia is essentially the same disorder in the two sexes but has an early onset in men and a late onset in women.[48] Males in our study were also found to have early onset with mean age of 24.64±6.02 however females did not show late onset as their mean age was almost similar to that of males (26.59±6.95). Similar results were found with Koujalgi and Patil 2013.[67]

Koujalgi and Patil 2013 observed in their comparison study on patients with schizophrenia and depression that 57 (57%) patients with schizophrenia remained unmarried, whereas, in the depression group only eight (8%) were found to be unmarried. Twenty nine (29%) of the respondents in the schizophrenia group were observed as married and 91 (91%) in the case of depression. When comparison was made in the divorce category, 14 (14%) of the schizophrenics were found to be divorced and one (1%) in case of depression, which was statistically significant ($P < 0.001$).[67] In our study we found out of total 44% (n=66) were married and rest 56% (n=84) were single who were further categorized into unmarried (49%), widow (0.7%) or divorced (6%). Unmarried patients of schizophrenia with mean score of 20, 22, 36 on positive, negative and general psychopathological symptoms scale respectively exhibited lower scores on HAM-D (mean=7.23) and QOL scale (mean=31.2) scoring significantly as compared to married patients. Thus concluding that majority of patients with schizophrenia tend to remain unmarried due to higher symptomatology and the need for lifelong treatment hinders their adequate functioning and affects their quality of life further increasing caregiver burden.

Koujalgi and Patil 2013 found in their occupation variable, that the number of unemployed people in the schizophrenia group was found to be 46 (46%), whereas two (2%) in the case of depression, employed people in the schizophrenia group were two (2%) whereas 22 (22%) were observed to be employed in the depression group. Professionals were zero (0%) in the schizophrenia group and two (2%) in the case of depression. Our study revealed that majority of the patients were unemployed (86%) but no significant correlation was found with the scores on HAM-D although mean scores were higher in those unemployed. However data showed significant correlation with quality of life as those employed has better quality of life. Our findings were consistent with J.M. Narvaez et al. 2007 and Peter F et al. 2019.[68][16] Employment status is an important indicator of patient's functioning and the level to which the society offers opportunity for gainful employment.

The high percentage of employed patients in this study adds to the literature on better employment status found in the developing countries. However A. Akinsulore et al. 2013 concluded that the crude comparison of employed and unemployed patients may not be useful without any information on the nature of patient's job and their level of functioning.[46]

Our study found that majority of patients of schizophrenia (70%) was literate (studied till higher secondary or 12th drop out). Only 4.7% patients were illiterate which were consistent with the results of Koujalgi and Patil 2013.[67] But in their study they found a significant difference in the acquisition of education between the schizophrenia and depression cohort which was not the case in our study. Our study found that 5.3% patients did their postgraduate. Cornblatt and Keilp stated that people, who are genetically vulnerable to schizophrenia, would be having significant cognitive impairment; similarly people, who are assessed for cognitive parameter before they develop schizophrenia, was observed to have impairment in many of the cognitive domains.[69] Thus patients of schizophrenia have significant difficulty in continuing with their studies and hence we considered it as our parameter.

Our study showed 78 (52%) patients lived in joint family and 72 (48%) patients belonged to nuclear families. No significant correlation was found between two groups with HAM-D and PANSS scoring. Similar results were seen between the two groups in the type of family, which was again statistically non-significant (P = 0.107) in the study by Koujalgi and Patil 2013.[67] Thus it was concluded that the type of family in which the patient lived did not make any difference in the course and prognosis of schizophrenia. We need to study the correlates as the extended/joint family differs from the nuclear family not only in its larger size but also in the greater emotional support, is more tolerant of patients' minor behavioural abnormalities and is more

helpful in the supervision of patients' medication and their social adjustment.

MC Gurk et al. 2004 reported social disadvantages like poverty, unemployment, racial discrimination, poor housing condition and family dysfunction are high risk factor for development of depression. Depression was also found more in urban settlement, which could be because of more predisposing/ precipitating stressors seen in urban area as compared to rural area. The current available literature also finds that presence of depressive symptoms are more seen in urban than rural area. The literature on schizophrenia is almost double in urban area than rural and our present study findings are consistent with literature. The study did find the same results of study by Van et al. 2005 where they reported, urban living environment has been consistently found to be a risk factor for schizophrenia.[70][71] Our study showed rural areas having higher mean scores on HAM-D and lower score on quality of life rating scale although no significant finding was seen.

Conley et al. 2007 found across their 3-year study, depressive symptoms were found to be associated with considerable long-term burden in the treatment of patients of schizophrenia. The patients who were depressed were more likely to use relapse related mental health services (emergency psychiatric services, contacts with psychiatrists), prone for greater danger to self and others (violent, arrested, victimized, suicidal), to have more substance-use related problems, to evidence poorer social and family relationships, and to have a poorer quality of life, lesser motivational level, poorer level of functioning, poorer mental and physical health, lower level of medication adherence indicating poor compliance, and less general life satisfaction.[28] Our study showed that those patients with poor compliance and those not adhering to treatment had significantly higher scores on PANSS-positive, negative and general psychopathological subscale in addition to higher scores on CGI-S showing higher severity of illness and poorer

scores on QOL scale. Elbogen et al. 2005 showed similar results.[72] Warnes found that 16 depressed schizophrenics who committed suicide received less medication than a sample of non-suicidal schizophrenic patients.[20] Thus patients who were not compliant to medications have severe illness leading to poor quality of life. This is the reason why most of the patients of schizophrenia are planned for long acting depot preparations keeping in mind poor compliance due to lack of insight or lack of social support.

Our study found that out of 150 patients 58(38%) patients were found to be smokers, furthermore, its correlation was inversely proportional to the quality of life and correlated directly with severity of illness although not significant. In two separate outpatient studies by Goff C et al. and Ziedonis et al., 74% and 68%, respectively, of individuals with schizophrenia were found to be smokers.[73][74] Among a group of 59 patients (nearly 70% of whom were out-patients), Glynn and Sussman found that 78% were current smokers.[74] Goff et al. found that smokers had a higher total score on the Brief Psychiatric Rating Scale (BPRS)[74] and higher BPRS subscale scores for both positive and negative symptoms. Ziedonis et al. also found more positive symptoms among smokers than among nonsmokers.[74] The probability of developing depression was 2.28 times higher in those patients of schizophrenia who currently used substance than those not using currently (AOR = 2.28, 95%CI). This is clarified by the fact that there has been found direct physiological effect of substance use on development of depressive symptoms.[34] A previous study by Li et al., 2016 however did not find any association between QOL and smoking, which might be due to potential confounders, such as insomnia and insight.[65] Thus comorbid substance use especially nicotine use can act as a confounding factor when enlisting the contributing and aggravating or perpetuating causes towards depression in schizophrenia. Only nicotine was considered predominantly in our study as various recent data suggests that the prevalence of smoking in schizophrenia remains high (around 70%) which in turn is likely to

have more intense positive symptoms and lower cognitive function, but diminished intensity of extrapyramidal side effects than nonsmoking patients with schizophrenia as found by Jack Baichao Ding 2021.[75]

In our study HAM-D was used for both indoor patients as well as outdoor patients. We found majority (60%) of the patients of schizophrenia had no depression whereas 30% of the patients were found to have mild depression. 7.3% patients were found to have moderate depression while only 2.7% patients reported severe depression. None of them fell in the category of very severe depression (score >23) in our study. The findings were consistent with the previously mentioned literature. Fanta et al. 2020, found the prevalence of depression to be 18% (14.5–22.3%) among the patients of schizophrenia. Out of the total participants with depression, 47.78% had mild, 34.62% had moderate, 15.4% had moderately severe, and 2.2% had severe depression.[34] Hou et al., 2016 found the prevalence of comorbid depressive symptoms at 54.6% and moderate/severe depressive symptoms at 21.7% in first episode and drug naïve (FEDN) patients with schizophrenia closely corresponds with a recent report finding 54.1% and 17.7%, respectively, in Chinese chronically ill patients of schizophrenia assessed in the primary care setting. However, a previous study by Liu and Zhou, 2009 found a lower prevalence (40.6%) of comorbid depressive symptoms when using a cut-off point of 6 or above on the Calgary Depression Scale for Schizophrenia (CDSS) in Chinese chronic schizophrenia outpatients.[23] In Middle East population study by El-Bahy and Mohamed 2012 reported prevalence to be 30%, which is in agreement with that reported by Siris and Bench.[54] Various literature used HAM-D as a rating scale for assessment of depression in patients of schizophrenia such as Markou who found point prevalence of 10% significant 42% mild-moderate depression in Inpatients and Outpatients scoring : 4.5% significant 48% mild-moderate depression; Zisook et al. also used HAMD >17 as rating score for depression; Mauri et al found

16.3%: moderate symptoms of depression in chronic inpatients of schizophrenia using HAM-D.[68]

As expected, the measured rates of depressive experience varied widely. There is methodological diversity in the literature quoted above due to varying definitions for schizophrenia (or psychotic illness), heterogenous study populations, and varying time intervals over which depressive occurrence was considered, ranging from point prevalence to many years. Nonetheless, as was noted in the superior review by Siris and Bench, the above-cited studies have persuasively indicated that patients with schizophrenia were prone to elevated rates of depression, with a modal frequency of about 25%.[68]

The mean duration of illness in our study was 9.24±7.059. R. Mojtabai in their meta-analysis of 19 studies found the average duration of illness was either reported, or could be calculated, using the two variables of age at onset and age at the time of assessment, was 10.5(SD=6.1),[76] close to what we found in our study. Results of the analyses for the association of duration of illness with symptom-pair (negative-negative) correlations stated that they are lower in studies of patients with more chronic illness, as evidenced by the negative correlation coefficients obtained in the WLS (weighted least squares) regressions. They suggested that with increasing duration of illness, correlations of symptoms within the negative and disorganized domains may decrease; whereas correlations across the negative, disorganized and psychotic domains may increase.[76] Similar findings were seen in our study stating negative correlation coefficient between the duration of illness and negative scores as measured on PANSS. The vegetative signs found in depression are illustratively similar to the negative symptoms. It might be the reason why negative symptoms and depression in schizophrenia are observationally difficult to tell apart. Thus presence of depression can mask the presence of negative symptoms in such patients which can be attributed as the reason for decrease in negative symptoms with increase in duration of illness

found in our study. The duration of illness was inversely related to positive symptoms as well but the findings were not significant ($p>0.05$). In the study by Fanta et al. 2020, substance use, duration of illness between 6 and 10 years, suicidality and poor quality of life were found to be significant associated factors of depression among schizophrenic patients. They stated that the patients who lived with the illness for 6–10 years are 2 times more likely to develop depression compared to those who lived with the illness for less than 5 years (AOR = 2.09, 95%CI (1.08,4.04)).[34] This finding is supported by the findings from the study conducted in Poland [56] and in the current study as well. Longer duration of illness was significantly associated with HAM-D scores indicating depression was common in chronic schizophrenics.

Duko and Ayano 2018 found 43.75% of schizophrenic patients had suicidal ideations as seen on composite international diagnostic interview (CIDI) for assessment of suicide which was much higher than the rate found in our study (2.70%). The cause for lower rate of patients reporting suicidal ideation in our study could be attributed to the small sample size or cross-sectional design of the study. Gill et al. 2015 in their study demonstrated that Clinically High Risk (CHR) patients with suicidality experience greater severity of total negative symptoms and worse functioning than those without suicidal behavior, and that controlling for depressive symptoms does not substantially diminish the relationship. This relationship is comparable to a study which examined the relationship between depressive and negative symptoms in the same CHR cohort (Corcoran et al., 2011), showing that both depressive symptoms and negative symptoms were related to social impairment, but when considered together, the negative symptoms drove the association.[53] However in our study, patients who has suicidal ideation did not significantly correlated with the negative and positive symptom subscales scores of PANSS whereas they showed direct correlation with scores on general psychopathology subscale of PANSS, HAM-D and CGI-S scales showing presence of depression and increased severity of illness in those with suicidal

ideations. On the other hand patients with suicidal ideations reported to have poor quality of life. Thus concluding suicidal ideations if present can further deteriorate the course and prognosis of the illness in patients with schizophrenia.

El-Bahy and Mohamed 2012 found that patients with depression had a significantly higher score on the PANSS-total, the general psychopathology subscale of the PANSS (PANSS-GP), and negative symptoms on the PANSS (PANSS-N) compared with non-depressed patients. However, there was no significant difference between depressed and non-depressed patients in terms of positive symptoms. Nevertheless, no correlation was found between depressive symptoms and positive symptoms. Their results show a significant association between the presence of depression and the score of the PANSS-GP as well as a moderate correlation between the PANSS-GP and the CDSS in patients with stable schizophrenia, but not in patients in the acute phase. This is in agreement with Reine et al. 2003 and Muller et al. 2006 [(77)(78)], who found that patients in the stable phase of schizophrenia who had depression on the basis of the CDSS had a significantly higher score on the PANSS-total and especially on the PANSS-GP than patients without depression.[(54)] Our findings from current study suggest the similar results where instead of CDSS, HAM-D was used. Gozdzik-zelazny A et al. stated that the nature of depressive symptoms in schizophrenic patients during remission is mainly associated with psychological factors, as opposed to the acute phase, in which the depressive symptoms are of the more classical biological type, which can be better detected, for instance, with the Hamilton Rating scale for Depression.[(56)]

Our study findings suggested PANSS general psychopathology scores significantly correlated with HAM-D scores but no significant findings were seen with positive and negative symptoms unlike previously quoted studies. We also found that all the subscale scores of PANSS

were significantly correlated positively with the severity of the illness but negatively with quality of life. HAM-D scores correlates with PANSS-GP subscale as depression being a part of the parameters in the general psychopathology subscale thus producing significant correlation. J. Dai et al. 2017 also used HAM-D to assess the depression. They found mean scores on the PANSS: positive subscale score, 25.5 ±6.6; negative subscale score, 19.3 ± 7.8 and general psychopathology subscale score, 41.0 ± 11.8 almost consistent with our study showing mean scores of PANSS-P mean=20.02, PANSS-N mean=20.65, and PANSS-GP mean score of 35.83. J. Dai et al. found that the PANSS general psychopathology subscale score, total score, cognitive factor and negative symptom subscale scores were significantly higher in patients with than those without comorbid depressive symptoms. In addition, correlation analysis showed significant correlations between HAM-D total score and the following parameters, the PANSS general psychopathology, PANSS total score, PANSS cognitive factor and negative symptom. Depression appears to be associated with a greater severity of disease and may overlap with negative symptoms.[23] As stated by Chemerinski et al. 2008 that negative symptoms in patients with schizophrenia may influence ratings of depression and clinician should be aware that depressive symptoms in these patients might lead to functional limitations, particularly in the actual deployment of skills in the real world. Thus, for majority of the patients with schizophrenia, depression might be an important treatment target for disability reduction.[59]

Multiple studies state that depression in schizophrenia has been recognized as one of the important factors influencing the QOL (Gold et al., 1992; Kibel et al., 1993; Sands and Harrow, 1999; Huppert et al., 2001; Siris, 2001; Reine et al., 2003; Norholm and Bech, 2006). In a recent study by Górecka and Czernikiewicz, 2004, it was found that the quality of life (QOL) correlated essentially with negative symptoms, positive symptoms and total time of all hospitalizations. Narvaez et al. (2008) found that more severe negative symptoms predicted poorer

objective QOL. Results from the study by Xiang et al. (2007) stated that past history of suicidal attempts along with the presence of positive, negative, depressive, anxiety and extra-pyramidal symptoms were all negatively correlated with QOL in patients of schizophrenia and positive symptoms predicted overall and physical QOL domains. While findings of some previous studies (Galletly et al., 1997; Heslegrave et al., 1997; Tollefson and Andersen et al., 1999; Solanki et al., 2008) suggest that general psychopathology score is more strongly associated with different domains of QOL than positive and negative symptoms, however no such findings were seen in study by A. Dan et al. 2011.[17] Findings in our study were consistent with the given literature. QOL scores significantly correlated with symptom subscales of PANSS, HAM-D and CGI-S scales indicating quality of life is the most important parameter being affected by the severity of illness as well as presence of absence of depressive symptoms in patients of schizophrenia.

Conley et al. in their 3-year study found that the depressive symptoms were associated with considerable long-term burden in the treatment of schizophrenia. Compared to those without depressive symptoms at enrollment, participants with depressive symptoms had poorer long-term functional outcomes in multiple domains. Various studies show the association between depressive symptoms in schizophrenia and poorer quality of life (Huppert et al., 2001; Pukrop, 2003; Tollefson et al., 1999; Sim et al., 2004); poorer social functioning (Glazer et al., 1981;Huppert et al., 2001;Jin et al., 2001;Sands and Harrow, 1999;Sim et al., 2004); and less satisfaction with life in general (Huppert et al., 2001;Sands and Harrow, 1999).[28] The findings across various completely non overlapping samples (Siu et al. 2015 and Harvey et al. 2017) suggest that the nearly complete absence of self-reported depression in schizophrenia may be a signal of the presence of problems in the ability to realistically evaluate both global life situations and specific functional skills. In the study by Siu et al. 2015, patients with minimal

self-reported depression provided self-reports of their global quality of life that was extraordinarily positive.[79][80]

Our study found results that were consistent with the given literature stating severity of illness as found on CGI-S was directly proportional to symptomatology as measured on PANSS subscales and at the same is inversely proportional to QOL indicating poor quality of life in severe illnesses. S Leucht et al. 2019 used equipercentile linking to examine corresponding scores on the CGI-I and CGI-S, and the PANSS-FSNS (PANSS-Factor Score for Negative Symptoms) and PANSS-NSS (negative symptom subscale). When they pooled their observations of the treatment group, CGI-S scores corresponded to estimated PANSS-FSNS scores as well as PANSS-NSS scores.[5] S.Z. Levine, S. Leucht 2013 found that the CGI subscales and the SANS followed a linear trend, as with greater CGI severity linked to higher SANS scores.[81] C.O. Siu et al. 2015 found in their analysis about a challenging subgroup of patients with chronic schizophrenia who manifested marked psychiatric symptoms and poor insight, had higher CGI-S score and lower objective clinicians-rated quality of life.[79]

Zisook S et al. stated that whether depressive symptoms are a core component of schizophrenia or, alternatively, are a result of living with persistent, severe psychosis cannot be easily determined, but it remains a question worthy of further investigation.[35]

With the help of above information we must aim to assess symptom-pattern of depression secondary-to-schizophrenia clinically so as to provide a better assessment and more efficient treatment to psychiatric patients. Recognizing depression as a separate treatable mood episode in the course of schizophrenia is a challenging task. But as Juckel G (2005) emphasized that the affective symptoms during a schizophrenic psychosis appear to have favorable prognostic implications[20], the need to find comorbid depression and its treatment

becomes extremely imperative. Detailed evaluation and assessment must include the implications of tools to diagnose affective symptoms along with other domains of schizophrenia and find if those symptoms fulfill the criteria for an independent mood disorder rather than attributable to the phenomenology of schizophrenia itself. It can help in improvement of the prognosis of the patient as well as additionally improve their quality of life.

SUMMARY AND CONCLUSION

This study was conducted on 150 patients of schizophrenia to assess the prevalence of depression and suicidality among them and to determine their quality of life. The data thus obtained was analyzed and following conclusions were reached:

- Majority of the patients of schizophrenia were young males (belonged to age group <30 years and 30-40 years) with mean age of 34.5 years.
- Majority were single (56%) and had read upto secondary high school (70%). Majority of patients (86%) were unemployed.
- 52% patients lived in joint family and almost equivalent percentage of patients (58%) i.e. the majority out of the total resided in rural areas.
- 72% patients remained compliant to medications and 38.7% patients had co-morbid nicotine use.
- Majority (60%) of the patients were found to have no depression whereas 30%, 7.3% and 2.7% of the patients were found to have mild, moderate and severe depression respectively. None of them fell in the category of very severe depression (score >23) in our study.
- With advancing age, the patients of schizophrenia who also were found to have longer duration of untreated psychosis, were found to be more depressed.
- Patients with longer duration of illness were found to have significant depressive symptoms as seen on HAM-D. Depressive symptoms were significantly high in chronic schizophrenia ($p<0.05$).
- Higher scores on positive and negative subscales of PANSS indicated higher severity of the illness and poor quality of life of the patients.
- High scores on general psychopathology subscale of PANSS correlated other subscales-positive and negative in a linear

fashion. Higher scores on this subscale depicted more depressive symptoms and increased severity of illness along with poor quality of life.

- On Hamilton Depression rating scale correlation, severity of depression increased with longer duration of illness and longer gap between onset of symptoms and seeking medical advice. It correlated directly with general psychopathology symptom subscale of PANSS. Higher severity of depressive symptoms was linked to poor quality of life as well.
- Quality of life was significantly interrelated with every parameter used in the study i.e. symptoms scoring on PANSS, severity of depressive symptoms and severity of the illness. Higher scores on PANSS, HAM-D and CGI-S allied with lower scores on QOL scale indicating poor quality of life in such patients.
- Severity of the illness in patients of schizophrenia as seen cross-sectionaly directly correlated with PANSS scores and higher the severity poorer the quality of life.
- Patients who were married scored higher on HAM-D despite which showed better scores on quality of life and lower scores on PANSS.
- Patients who remained compliant to the treatment had lesser severity of illness as exhibited by lower scores on PANSS.
- Half of the patients (50%) with suicidal ideations as on CSSR-S were found to have moderate depression and rest 50% had severe depression.
- More the severity of depression, lower is the quality of life.
- Presence of suicidal ideations directly correlated with HAM-D.

Hence, our study concludes that there depression is significantly prevalent amongst patients of schizophrenia. The depressive symptoms when present can deteriorate quality of life of these patients. Presence of suicidal ideations can further impose a risk to the lives of patients of schizophrenia hence strengthening the need for adequate diagnosis and use of appropriate measures for

its management to improve the course and prognosis of the illness. The findings in our study, in Indian context, are concordant with the pre-existing literature of the west. Thus, the understanding and awareness of association of depression and schizophrenia for early screening and timely management is the need of the hour in India. This should further guide the treatment protocols of patients with schizophrenia to reduce the distress and improve the Quality of life. Its further implication can be that it can be that antidepressants can be tried as an adjunct treatment option to on-going antipsychotic medications thus will improve the treatment outcome.

LIMITATIONS

- The small sample size of patients of schizophrenia in our study does not represent the total population of schizophrenia patients. This limits the generalization of the results on these patients.
- This is a cross-sectional study, thus the causality of associations between depression and its correlates could not be ascertained.
- Post psychotic depression and schizoaffective disorders were not included in the study.

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PROFORMA

S. No.

DATE-

NAME * AGE GENDER

MRD NO.

MARITAL STATUS

EDUCATION OCCUPATION/LOSS OF FUNCTION
INCOME

TYPE OF FAMILY- JOINT/NUCLEAR/LIVING ALONE

ADDRESS

CONTACT NO.

AGE OF ONSET OF SCHIZOPHRENIA

DURATION OF ILLNESS /COURSE OF ILLNESS

TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE

COMPLIANCE

COMORBID NICOTINE USE

FAMILY HISTORY OF SCHIZOPHRENIA

FAMILY HISTORY OF ANY MENTAL ILLNESS EXCEPT SCHIZOPHRENIA

P/H/O SUICIDAL IDEATION/BEHAVIOUR/ATTEMPT (ELABORATE IF ANY)

F/H/O SUICIDE

Signature of Candidate **Signature of Supervisor**

S NO.	MRD NO.	INITIALS	AGE	GENDER	MARITAL STATUS	EDUCATION	OCCUPATION / LOSS OF FUNCTION	INCOME	SOCIOECONOMIC CLASS	TYPE OF FAMILY	URBAN / RURAL	DURATION OF ILLNESS (years)	AGE OF ONSET OF SCHIZOPHRENIA	TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE(years)	COMPLAINCE	CO-MORBID NICOTINE USE	FAMILY HISTORY OF SCHIZOPHRENIA
1	1128983	A	32	F	UNMARRIED	MBA	EMPLOYED	50K/MONTH	2	NUCLEAR	URBAN	7	26	3.00	NO	NO	ELDER SISTER
2	1157694	JD	26	F	MARRIED	MA ENGLISH	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	3	24	0.08	YES	NO	NONE
3	790866	JS	30	M	UNMARRIED	12	EMPLOYED	5K/MONTH	5	NUCLEAR	URBAN	3	27	0.50	NO	YES	NONE
4	1049706	GS	20	M	UNMARRIED	12	UNEMPLOYED	NONE	4	JOINT	URBAN	1	19	0.25	NO	YES	NONE
5	1232942	PS	20	M	UNMARRIED	12	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	1.5	18	0.08	NO	YES	NONE
6	827096	AS	27	M	UNMARRIED	12	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	7	20	2.00	YES	NO	NONE
7	1194637	JS	34	M	UNMARRIED	B. COM	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	9	26	1.00	YES	NO	NONE
8	1199054	IS	36	M	UNMARRIED	B. COM	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	7	29	3.00	NO	YES	NONE
9	320756	AG	29	F	UNMARRIED	B. TECH	EMPLOYED	50K/MONTH	2	NUCLEAR	URBAN	11	18	0.25	YES	NO	NONE
10	1229469	PB	31	F	UNMARRIED	M. TECH	EMPLOYED	60K/MONTH	2	NUCLEAR	URBAN	1.5	29	0.50	NO	NO	NONE
11	584516	AB	33	F	UNMARRIED	B.ED	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	7	27	0.67	NO	NO	NONE
12	1218903	N	33	F	UNMARRIED	12	UNEMPLOYED	NONE	4	JOINT	URBAN	8	26	2.00	NO	NO	MATERNAL GRANDMOTHER
13	472907	TS	31	M	UNMARRIED	11	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	9	22	1.00	NO	NO	NONE
14	1205625	GK	35	F	MARRIED	10	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	10	25	3.00	YES	NO	GRANDMOTHER
15	1146061	SD	55	F	MARRIED	ILLITERATE	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	25	30	1.00	YES	NO	FATHER
16	139596	BK	43	F	MARRIED	ILLITERATE	UNEMPLOYED	NONE	5	NUCLEAR	RURAL	13	30	2.00	NO	NO	NONE
17	883639	RB	28	M	UNMARRIED	12	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	4	24	0.25	NO	YES	NONE
18	877947	GS	30	M	UNMARRIED	12	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	4	26	1.00	NO	YES	GRANDFATHER
19	1187812	MS	29	M	UNMARRIED	10	UNEMPLOYED	NONE	5	JOINT	RURAL	5	24	1.00	NO	NO	MATERNAL GRANDFATHER
20	1179583	SS	23	M	UNMARRIED	12	UNEMPLOYED	NONE	4	JOINT	RURAL	2	21	0.50	YES	YES	NONE
21	859502	KS	23	M	UNMARRIED	BA	UNEMPLOYED	NONE	4	JOINT	URBAN	3	20	0.17	YES	YES	NONE
22	1151472	RS	28	F	UNMARRIED	12	UNEMPLOYED	NONE	5	NUCLEAR	RURAL	4	24	0.50	NO	NO	GRANDMOTHER
23	1049706	GS	20	M	UNMARRIED	10	UNEMPLOYED	NONE	4	JOINT	RURAL	1	19	0.25	NO	YES	NONE
24	1034199	TA	30	M	UNMARRIED	12	UNEMPLOYED	NONE	4	JOINT	URBAN	6	24	2.00	NO	YES	MATERNAL UNCLE
25	1081028	E	30	F	UNMARRIED	12	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	3	26	0.25	YES	NO	NONE
26	899515	KS	29	M	UNMARRIED	11	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	8	22	1.00	YES	YES	PATERNAL UNCLE
27	1112763	SS	50	F	MARRIED	10	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	18	32	2.00	YES	NO	NONE
28	1063788	NG	45	F	MARRIED	12	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	16	29	0.50	YES	NO	NONE
29	1120615	VB	42	F	MARRIED	BA	UNEMPLOYED	NONE	2	NUCLEAR	URBAN	12	30	0.50	YES	NO	NONE
30	1126066	YG	22	M	UNMARRIED	11	UNEMPLOYED	NONE	2	JOINT	URBAN	2	20	0.08	YES	YES	NONE
31	1010435	RD	26	F	UNMARRIED	10	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	8	18	0.25	YES	NO	NONE
32	1014026	V	31	M	MARRIED	10	UNEMPLOYED	NONE	3	JOINT	RURAL	3	29	1.00	YES	YES	NONE
33	1031292	SS	34	M	UNMARRIED	B TecH	UNEMPLOYED	NONE	2	NUCLEAR	URBAN	9	26	1.00	NO	NO	NONE
34	1029997	RK	45	F	MARRIED	12	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	15	30	1.00	NO	NO	NONE
35	39841	K	21	M	UNMARRIED	10	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	3	19	0.50	YES	NO	NONE
36	979193	RK	24	F	UNMARRIED	BA	UNEMPLOYED	NONE	5	NUCLEAR	RURAL	3	21	0.50	NO	NO	GRANDFATHER
37	982566	MK	27	F	UNMARRIED	BA	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	4	24	1.00	YES	NO	NONE
38	1250127	DD	27	M	UNMARRIED	B TecH	UNEMPLOYED	NONE	5	NUCLEAR	RURAL	2	25	0.33	NO	NO	NONE
39	1253577	PSJ	41	M	MARRIED	B TecH	EMPLOYED	40K EUROS/MONTHS	2	JOINT	URBAN	8	33	0.08	YES	NO	MOTHER, MATERNAL GRANDMOTHER
40	1251857	AS	52	M	MARRIED	9	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	12	40	0.25	YES	NO	NONE
41	1255086	AB	24	M	UNMARRIED	12	UNEMPLOYED	NONE	3	JOINT	RURAL	2	22	0.08	YES	YES	NONE
42	932453	JDS	52	M	UNMARRIED	MA ENGLISH	UNEMPLOYED	NONE	1	JOINT	URBAN	34	18	0.50	YES	NO	NONE
43	1039174	KS	19	M	UNMARRIED	10	UNEMPLOYED	NONE	4	JOINT	RURAL	1	18	0.17	NO	YES	MATERNAL UNCLE
44	1019518	AS	22	M	UNMARRIED	9	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	5	17	0.08	NO	YES	MATERNAL GRANDMOTHER
45	827096	AS	27	M	UNMARRIED	12	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	3	24	0.50	NO	YES	NONE
46	164561	YB	43	M	MARRIED	10	UNEMPLOYED	NONE	3	JOINT	RURAL	10	33	2.00	YES	YES	MATERNAL GRANDMOTHER
47	1262050	MS	37	M	MARRIED	10	UNEMPLOYED	NONE	2	JOINT	RURAL	3	33	2.00	NO	YES	GRANDFATHER
48	243987	S	46	M	MARRIED	10	UNEMPLOYED	5K/MONTH	3	NUCLEAR	RURAL	5	41	1.00	NO	YES	NONE
49	1256637	PK	34	F	MARRIED	MBA	UNEMPLOYED	NONE	2	NUCLEAR	URBAN	8	26	0.08	NO	NO	NONE
50	54927	NK	43	M	MARRIED	10	EMPLOYED	5K/MONTH	2	NUCLEAR	URBAN	18	25	0.25	YES	YES	NONE
51	930056	DK	25	F	UNMARRIED	10	UNEMPLOYED	NONE	2	NUCLEAR	RURAL	3	22	0.50	YES	NO	NONE
52	1268825	GS	35	M	MARRIED	B.PHARMA	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	6	29	0.33	YES	NO	NONE
53	1272504	APY	33	M	MARRIED	B TecH	EMPLOYED	80K/MONTH	2	NUCLEAR	URBAN	7	27	0.08	NO	YES	NONE
54	992065	HS	34	F	UNMARRIED	B.ED	UNEMPLOYED	NONE	2	NUCLEAR	URBAN	1	33	0.08	YES	NO	NONE
55	368139	MS	23	M	UNMARRIED	10	UNEMPLOYED	NONE	2	NUCLEAR	RURAL	2	21	0.25	YES	YES	NONE
56	1227775	JPS	33	M	UNMARRIED	10	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	3	30	0.08	YES	YES	MATERNAL GRANDFATHER
57	113498	DK	52	F	MARRIED	5	UNEMPLOYED	NONE	5	JOINT	RURAL	12	40	1.00	YES	NO	NONE
58	40945	VK	38	M	MARRIED	10	EMPLOYED	5K/MONTH	4	NUCLEAR	RURAL	12	26	0.50	YES	YES	NONE
59	46344	M	45	F	MARRIED	12	EMPLOYED	1500/MONTH	4	NUCLEAR	RURAL	10	35	2.00	YES	NO	NONE
60	52927	DK	33	M	UNMARRIED	12	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	12	21	0.50	NO	NO	YOUNGER BROTHER
61	873318	HS	21	M	UNMARRIED	8	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	6	15	0.17	YES	NO	NONE
62	98807	BK	50	F	MARRIED	10	UNEMPLOYED	NONE	4	JOINT	RURAL	28	22	1.00	YES	NO	NONE
63	147987	AS	37	M	MARRIED	6	UNEMPLOYED	NONE	3	JOINT	RURAL	10	27	1.00	YES	YES	NONE
64	1162394	JS	26	M	MARRIED	10	EMPLOYED	1000/MONTH	3	JOINT	RURAL	2	24	0.50	YES	YES	NONE

S NO.	MRD NO.	FAMILY HISTORY OF ANY MENTAL ILLNESS OTHER THAN SCHIZOPHRENIA	PAST HISTORY OF SUICIDAL IDEATION/ BEHAVIOR/ ATTEMPT	FAMILY HISTORY OF SUICIDE	PANSS-POSITIVE SCORE	NEGATIVE SCORE	GENERAL PSYCHOPATHOLOGICAL SCORE	HAM-D	CGI-S – SEVERITY SCORE	QOLS- TOTAL SCORE	C-SSRS SUICIDAL IDEATION	C-SSR SCORE FOR SUICIDAL IDEATION (HIGHEST LEVEL ENDORSED 1-5)	INTENSITY OF IDEATION (2-25)	MEDICAL DAMAGE FOR ATTEMPT (0-5)	POTENTIAL LETHALITY (IF MEDICAL DAMAGE 0) (0-2)
1	1128983	NONE	YES	NO	29	26	54	8	7	30	NO	3	6	2	NA
2	1157694	NONE	NO	NO	18	20	31	4	4	51	NO	NA	NA	NA	NA
3	790866	NONE	NO	NO	18	20	36	7	6	43	NO	NA	NA	NA	NA
4	1049706	NONE	NO	NO	22	26	44	6	7	24	NO	NA	NA	NA	NA
5	1232942	INTELLECTUAL DISABILITY	NO	NO	34	20	56	9	7	25	NO	NA	NA	NA	NA
6	827096	NONE	NO	NO	20	22	45	11	7	22	NO	3	12	0	1
7	1194637	NONE	NO	NO	25	18	37	8	6	35	NO	NA	NA	NA	NA
8	1199054	NONE	NO	NO	22	24	36	7	7	23	NO	NA	NA	NA	NA
9	320756	NONE	NO	NO	21	25	37	12	7	23	NO	NA	NA	NA	NA
10	1229469	NONE	NO	NO	25	30	34	6	7	24	NO	NA	NA	NA	NA
11	584516	NONE	NO	NO	29	32	53	6	7	20	NO	NA	NA	NA	NA
12	1218903	NONE	NO	NO	23	27	37	6	6	24	NO	NA	NA	NA	NA
13	472907	NONE	NO	NO	18	22	40	6	5	35	NO	NA	NA	NA	NA
14	1205625	NONE	NO	NO	20	18	35	6	4	55	NO	NA	NA	NA	NA
15	1146061	NONE	NO	NO	18	23	36	6	6	30	NO	NA	NA	NA	NA
16	139596	NONE	NO	NO	23	26	50	8	7	20	NO	NA	NA	NA	NA
17	883639	DEPRESSION IN MOTHER	NO	NO	25	28	44	10	6	25	NO	NA	NA	NA	NA
18	877947	NONE	NO	NO	20	34	44	6	5	30	NO	NA	NA	NA	NA
19	1187812	NONE	NO	NO	19	42	52	6	7	20	NO	NA	NA	NA	NA
20	1179583	NONE	NO	NO	20	25	43	5	4	29	NO	NA	NA	NA	NA
21	859502	NONE	NO	NO	22	34	40	6	4	34	NO	NA	NA	NA	NA
22	1151472	NONE	NO	NO	30	21	54	7	7	20	NO	NA	NA	NA	NA
23	1049706	NONE	NO	NO	23	25	37	7	5	35	NO	NA	NA	NA	NA
24	1034199	NONE	NO	NO	30	29	51	7	7	20	NO	NA	NA	NA	NA
25	1081028	NONE	NO	NO	18	20	35	5	4	54	NO	NA	NA	NA	NA
26	899515	NONE	NO	YES	22	31	39	9	6	28	NO	NA	NA	NA	NA
27	1112763	BIPOLAR IN PATERNAL COUSIN	NO	NO	27	24	41	12	7	25	NO	NA	NA	NA	NA
28	1063788	NONE	NO	NO	18	24	33	9	4	50	NO	NA	NA	NA	NA
29	1120615	NONE	NO	NO	25	34	55	12	7	26	NO	NA	NA	NA	NA
30	1126066	NONE	NO	NO	15	24	35	6	5	48	NO	NA	NA	NA	NA
31	1010435	NONE	NO	NO	15	26	33	7	4	45	NO	NA	NA	NA	NA
32	1014026	NONE	NO	NO	12	20	33	6	4	54	NO	NA	NA	NA	NA
33	1031292	NONE	NO	NO	30	28	45	8	7	25	NO	NA	NA	NA	NA
34	1029997	BIPOLAR IN FATHER	NO	NO	24	28	55	14	7	22	NO	NA	NA	NA	NA
35	39841	NONE	NO	NO	18	16	23	6	5	37	NO	NA	NA	NA	NA
36	979193	NONE	NO	NO	24	27	40	6	6	34	NO	NA	NA	NA	NA
37	982566	NONE	NO	NO	17	21	32	5	4	39	NO	NA	NA	NA	NA
38	1250127	NONE	NO	NO	18	26	34	11	6	35	NO	NA	NA	NA	NA
39	1253577	NONE	NO	NO	18	16	30	7	5	44	NO	NA	NA	NA	NA
40	1251857	NONE	NO	NO	15	11	32	10	6	40	NO	NA	NA	NA	NA
41	1255086	NONE	NO	NO	18	15	38	5	5	48	NO	NA	NA	NA	NA
42	932453	NONE	NO	NO	12	21	40	8	6	20	NO	NA	NA	NA	NA
43	1039174	NONE	NO	NO	16	24	44	7	7	25	NO	NA	NA	NA	NA
44	1019518	NONE	NO	NO	18	22	38	6	7	25	NO	NA	NA	NA	NA
45	827096	NONE	NO	NO	22	25	44	6	7	30	NO	NA	NA	NA	NA
46	164561	NONE	NO	NO	16	23	40	6	9	28	NO	NA	NA	NA	NA
47	1262050	NONE	NO	NO	20	35	55	6	7	26	NO	NA	NA	NA	NA
48	243987	NONE	NO	NO	26	30	31	8	7	25	NO	NA	NA	NA	NA
49	1256637	NONE	NO	NO	22	17	23	6	5	35	NO	NA	NA	NA	NA
50	54927	NONE	NO	NO	10	12	18	4	3	48	NO	NA	NA	NA	NA
51	930056	PATERNAL AUNT	NO	NO	16	14	28	9	4	40	NO	NA	NA	NA	NA
52	1268825	NONE	NO	NO	30	25	34	6	7	25	NO	NA	NA	NA	NA
53	1272504	NONE	NO	NO	15	12	30	7	6	32	NO	NA	NA	NA	NA
54	992065	NONE	NO	NO	14	15	25	8	4	35	NO	NA	NA	NA	NA
55	368139	NONE	NO	NO	16	22	30	6	5	29	NO	NA	NA	NA	NA
56	1227775	NONE	NO	NO	11	24	37	7	7	28	NO	NA	NA	NA	NA
57	113498	PATERNAL AUNT	NO	NO	15	13	26	8	6	36	NO	NA	NA	NA	NA
58	40945	NONE	NO	NO	12	15	29	6	4	40	NO	NA	NA	NA	NA
59	46344	NONE	NO	NO	11	14	34	10	5	32	NO	NA	NA	NA	NA
60	52927	NONE	NO	NO	35	20	40	9	7	22	NO	NA	NA	NA	NA
61	873318	NONE	NO	NO	32	28	35	10	7	26	NO	NA	NA	NA	NA
62	98807	NONE	NO	NO	24	28	32	11	5	29	NO	NA	NA	NA	NA
63	147987	NONE	NO	NO	22	24	49	7	6	29	NO	NA	NA	NA	NA
64	1162394	NONE	NO	NO	30	28	44	7	6	30	NO	NA	NA	NA	NA

S NO.	MRD NO.	INITIALS	AGE	GENDER	MARITAL STATUS	EDUCATION	OCCUPATION / LOSS OF FUNCTION	INCOME	SOCIOECONOMIC CLASS	TYPE OF FAMILY	URBAN / RURAL	DURATION OF ILLNESS (years)	AGE OF ONSET OF SCHIZOPHRENIA	TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE(years)	COMPLAINCE	CO-MORBID NICOTINE USE	FAMILY HISTORY OF SCHIZOPHRENIA
65	38689	DS	34	M	UNMARRIED	12	UNEMPLOYED	NONE	4	JOINT	URBAN	11	23	2.00	NO	YES	MATERNAL GRANDFATHER
66	42937	MS	23	M	UNMARRIED	10	EMPLOYED	1200/MONTH	3	NUCLEAR	URBAN	6	18	1.00	YES	YES	NONE
67	721810	KD	46	F	MARRIED	ILLITERATE	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	1	45	1.00	NO	NO	NONE
68	1175230	JN	18	M	UNMARRIED	4	UNEMPLOYED	NONE	2	JOINT	RURAL	0.5	18	0.50	NO	NO	NONE
69	1280672	HS	30	M	UNMARRIED	BA	EMPLOYED	10K/MONTH	4	JOINT	URBAN	6	24	0.25	YES	NO	NONE
70	1294046	A	43	F	MARRIED	6	UNEMPLOYED	NONE	3	JOINT	RURAL	15	28	1.00	YES	NO	NONE
71	1292512	NJ	30	M	UNMARRIED	10	EMPLOYED	15K/MONTH	3	JOINT	RURAL	6	24	1.00	YES	NO	NONE
72	1287106	RS	38	M	MARRIED	10	EMPLOYED	15K/MONTH	3	NUCLEAR	URBAN	6	32	0.50	YES	YES	NONE
73	1273764	R	31	F	MARRIED	BA	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	6	25	1.00	YES	NO	FATHER
74	135046	S	53	F	DIVORCED	BA	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	21	32	1.00	NO	NO	NONE
75	1173336	S	25	F	UNMARRIED	12	UNEMPLOYED	NONE	3	JOINT	RURAL	6	19	0.50	YES	NO	NONE
76	59230	GS	32	M	UNMARRIED	12	UNEMPLOYED	NONE	3	JOINT	RURAL	15	19	1.00	YES	YES	NONE
77	161279	P	54	M	MARRIED	8	EMPLOYED	6K/ MONTH	2	NUCLEAR	URBAN	35	17	3.00	YES	YES	NONE
78	68264	RK	48	M	UNMARRIED	BA	UNEMPLOYED	NONE	3	JOINT	RURAL	1	47	0.50	YES	YES	NONE
79	506342	AK	36	M	MARRIED	8	UNEMPLOYED	NONE	4	JOINT	RURAL	8	28	0.50	YES	NO	NONE
80	893680	S	30	F	MARRIED	10	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	5	25	1.00	YES	NO	NONE
81	736516	JK	32	F	MARRIED	10	UNEMPLOYED	NONE	3	JOINT	URBAN	5	27	0.08	YES	NO	NONE
82	125114	SK	24	M	UNMARRIED	12	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	8	16	0.25	YES	YES	NONE
83	928034	MK	28	F	MARRIED	12	UNEMPLOYED	NONE	4	JOINT	URBAN	8	20	0.50	YES	NO	NONE
84	216448	GS	27	M	UNMARRIED	12	UNEMPLOYED	NONE	3	JOINT	RURAL	7	20	0.25	YES	NO	MATERNAL GRANDFATHER
85	818344	KK	39	F	MARRIED	12	UNEMPLOYED	NONE	4	JOINT	RURAL	8	31	0.33	YES	NO	NONE
86	826949	IS	24	M	UNMARRIED	8	UNEMPLOYED	NONE	5	NUCLEAR	RURAL	9	15	2.00	YES	YES	MATERNAL GRANDMOTHER
87	1272087	AR	19	M	UNMARRIED	BA	UNEMPLOYED	NONE	3	JOINT	RURAL	1	18	1.00	YES	NO	NONE
88	39503	KS	43	M	MARRIED	12	UNEMPLOYED	NONE	3	JOINT	RURAL	17	24	3.00	YES	YES	FATHER
89	1007632	MK	28	F	MARRIED	BA	UNEMPLOYED	NONE	3	JOINT	RURAL	2	28	0.17	YES	NO	NONE
90	99109	AK	46	M	UNMARRIED	7	UNEMPLOYED	NONE	4	JOINT	RURAL	14	32	1.00	NO	YES	NONE
91	1001301	SS	48	M	MARRIED	10	UNEMPLOYED	NONE	4	JOINT	RURAL	12	36	3.00	YES	YES	NONE
92	1301559	KD	40	F	MARRIED	5	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	0.5	40	0.17	YES	NO	NONE
93	26959	RK	38	F	UNMARRIED	MSC(IT)	UNEMPLOYED	NONE	3	JOINT	URBAN	14	24	0.25	YES	NO	NONE
94	95500	AK	35	M	MARRIED	10	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	11	24	0.17	YES	YES	NONE
95	102055	GK	50	F	MARRIED	12	UNEMPLOYED	NONE	3	JOINT	RURAL	6	44	0.25	YES	NO	NONE
96	117229	BK	35	F	DIVORCED	10	UNEMPLOYED	NONE	4	JOINT	RURAL	13	33	2.00	YES	NO	NONE
97	54976	HS	45	M	MARRIED	10	EMPLOYED	7000/MONTH	2	NUCLEAR	URBAN	15	30	0.17	YES	NO	NONE
98	1162887	AS	25	M	MARRIED	8	EMPLOYED	7000/MONTH	2	JOINT	URBAN	1	24	0.08	YES	YES	NONE
99	68754	Z	30	F	UNMARRIED	10	UNEMPLOYED	NONE	3	JOINT	URBAN	11	19	2.00	YES	NO	MATERNAL GRANDMOTHER
100	735943	D	29	M	UNMARRIED	D-PHARMA	UNEMPLOYED	NONE	3	JOINT	URBAN	8	21	3.00	NO	YES	MATERNAL UNCLE
101	589182	SR	33	F	MARRIED	12	UNEMPLOYED	NONE	4	JOINT	RURAL	14	19	3.00	NO	NO	NONE
102	43251	AS	35	M	MARRIED	6	UNEMPLOYED	NONE	3	JOINT	RURAL	7	28	1.00	YES	YES	NONE
103	94013	P	49	M	MARRIED	12	EMPLOYED	2000/MONTH	3	JOINT	RURAL	14	35	2.00	YES	YES	NONE
104	1300632	A	42	F	MARRIED	10	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	16	36	1.00	YES	NO	NONE
105	289403	AS	36	M	UNMARRIED	10	UNEMPLOYED	NONE	2	JOINT	URBAN	14	22	3.00	YES	YES	NONE
106	79094	J	47	M	MARRIED	8	UNEMPLOYED	NONE	3	JOINT	RURAL	23	24	5.00	YES	YES	NONE
107	272755	SK	37	F	DIVORCED	2	UNEMPLOYED	NONE	4	JOINT	RURAL	25	17	3.00	YES	NO	MOTHER
108	40263	B	34	M	MARRIED	4	UNEMPLOYED	NONE	3	JOINT	RURAL	11	23	2.00	YES	NO	MATERNAL UNCLE
109	1316715	SK	30	F	UNMARRIED	MBA	UNEMPLOYED	NONE	3	JOINT	RURAL	8	22	2.00	YES	NO	NONE
110	942222	D	37	M	MARRIED	BA	EMPLOYED	9000	3	JOINT	URBAN	8	29	0.50	YES	YES	NONE
111	1013287	K	40	F	MARRIED	ILLITERATE	UNEMPLOYED	NONE	3	JOINT	URBAN	20	20	3.00	YES	NO	NONE
112	16577	AK	34	M	UNMARRIED	BA	UNEMPLOYED	NONE	3	JOINT	RURAL	6	28	0.25	YES	YES	NONE
113	1156444	HK	50	F	MARRIED	ILLITERATE	UNEMPLOYED	NONE	4	JOINT	RURAL	13	37	0.50	YES	NO	NONE
114	1322836	PS	45	M	DIVORCED	B.ED	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	15	28	1.00	NO	YES	BROTHERS
115	1251770	GS	28	M	UNMARRIED	12	UNEMPLOYED	NONE	3	JOINT	URBAN	3	25	0.50	NO	YES	NONE
116	1178744	M	33	M	UNMARRIED	8	UNEMPLOYED	NONE	4	JOINT	RURAL	15	18	2.00	NO	NO	NONE
117	491476	P	40	M	MARRIED	ILLITERATE	EMPLOYED	10000	2	NUCLEAR	URBAN	19	21	1.00	YES	YES	NONE
118	46174	MK	31	F	MARRIED	10	UNEMPLOYED	NONE	3	JOINT	RURAL	7	24	2.00	YES	NO	NONE
119	113498	DK	52	F	MARRIED	10	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	17	35	3.00	YES	NO	NONE
120	1326704	RK	43	F	DIVORCED	12	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	25	18	5.00	NO	NO	FATHER
121	68089	IK	43	F	MARRIED	10	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	25	18	1.00	YES	NO	FATHER
122	46174	MK	31	F	MARRIED	10	UNEMPLOYED	NONE	4	JOINT	RURAL	6	25	0.50	YES	NO	NONE
123	431309	DR	46	M	MARRIED	8	UNEMPLOYED	NONE	4	JOINT	RURAL	20	26	1.00	YES	NO	FATHER
124	558158	MS	40	M	MARRIED	7	UNEMPLOYED	NONE	3	JOINT	RURAL	18	22	0.50	YES	NO	MOTHER, BROTHER
125	101367	JK	29	F	MARRIED	6	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	9	22	1.00	YES	NO	NONE
126	135304	MJ	45	F	MARRIED	10	UNEMPLOYED	NONE	3	JOINT	RURAL	21	24	0.25	YES	NO	NONE
127	1141970	B	48	F	WIDOW	ILLITERATE	UNEMPLOYED	NONE	4	JOINT	RURAL	26	22	2.00	YES	NO	NONE
128	71592	SS	39	M	MARRIED	BA	EMPLOYED	6000/MONTH	3	JOINT	RURAL	10	29	2.00	YES	NO	NONE

S NO.	MRD NO.	FAMILY HISTORY OF ANY MENTAL ILLNESS OTHER THAN SCHIZOPHRENIA	PAST HISTORY OF SUICIDAL IDEATION/ BEHAVIOR/ ATTEMPT	FAMILY HISTORY OF SUICIDE	PANSS-POSITIVE SCORE	NEGATIVE SCORE	GENERAL PSYCHOPATHOLOGICAL SCORE	HAM-D	CGI-S – SEVERITY SCORE	QOLS- TOTAL SCORE	C-SSRS SUICIDAL IDEATION	C-SSR SCORE FOR SUICIDAL IDEATION (HIGHEST LEVEL ENDORSED 1-5)	INTENSITY OF IDEATION (2-25)	MEDICAL DAMAGE FOR ATTEMPT (0-5)	POTENTIAL LETHALITY (IF MEDICAL DAMAGE 0) (0-2)
65	38689	NONE	NO	NO	20	28	30	6	5	24	NO	NA	NA	NA	NA
66	42937	NONE	NO	NO	24	28	40	6	4	30	NO	NA	NA	NA	NA
67	721810	NONE	NO	NO	26	18	44	6	5	36	NO	NA	NA	NA	NA
68	1175230	NONE	NO	NO	22	20	30	6	5	32	NO	NA	NA	NA	NA
69	1280672	NONE	NO	NO	20	16	37	6	4	40	NO	NA	NA	NA	NA
70	1294046	NONE	NO	NO	16	18	35	5	5	38	NO	NA	NA	NA	NA
71	1292512	NONE	NO	NO	22	20	38	5	5	44	NO	NA	NA	NA	NA
72	1287106	NONE	NO	NO	16	18	29	6	4	38	NO	NA	NA	NA	NA
73	1273764	NONE	NO	NO	22	18	34	9	5	38	NO	NA	NA	NA	NA
74	135046	NONE	NO	NO	16	24	40	14	5	26	NO	NA	NA	NA	NA
75	1173336	NONE	NO	NO	16	18	25	7	4	35	NO	NA	NA	NA	NA
76	59230	NONE	NO	NO	18	20	32	5	4	34	NO	NA	NA	NA	NA
77	161279	NONE	NO	NO	11	14	23	12	4	37	NO	NA	NA	NA	NA
78	68264	NONE	NO	NO	20	21	33	6	6	35	NO	NA	NA	NA	NA
79	506342	NONE	NO	NO	25	15	28	6	4	45	NO	NA	NA	NA	NA
80	893680	NONE	NO	NO	21	18	32	8	4	32	NO	NA	NA	NA	NA
81	736516	NONE	NO	NO	23	16	37	6	4	27	NO	NA	NA	NA	NA
82	125114	NONE	NO	NO	18	20	34	9	5	28	NO	NA	NA	NA	NA
83	928034	NONE	NO	NO	20	18	28	5	4	30	NO	NA	NA	NA	NA
84	216448	NONE	NO	NO	23	22	33	7	4	28	NO	NA	NA	NA	NA
85	818344	NONE	NO	NO	24	20	32	8	4	26	NO	NA	NA	NA	NA
86	826949	NONE	NO	NO	16	18	27	6	4	38	NO	NA	NA	NA	NA
87	1272087	NONE	NO	NO	22	16	33	7	4	35	NO	NA	NA	NA	NA
88	39503	NONE	NO	NO	18	16	28	14	4	35	NO	NA	NA	NA	NA
89	1007632	NONE	NO	NO	16	20	33	12	4	28	NO	NA	NA	NA	NA
90	99109	NONE	NO	NO	20	18	35	8	5	24	NO	NA	NA	NA	NA
91	1001301	NONE	NO	NO	25	22	37	7	6	26	NO	NA	NA	NA	NA
92	1301559	NONE	NO	NO	26	20	36	7	6	30	NO	NA	NA	NA	NA
93	26959	NONE	NO	NO	26	22	40	7	6	28	NO	NA	NA	NA	NA
94	95500	NONE	NO	NO	16	12	28	6	4	45	NO	NA	NA	NA	NA
95	102055	NONE	NO	NO	18	20	40	12	5	28	NO	NA	NA	NA	NA
96	117229	NONE	NO	NO	22	20	34	8	5	30	NO	NA	NA	NA	NA
97	54976	NONE	NO	NO	14	12	28	6	4	49	NO	NA	NA	NA	NA
98	1162887	NONE	NO	NO	18	22	32	6	4	28	NO	NA	NA	NA	NA
99	68754	NONE	NO	NO	14	18	30	6	4	40	NO	NA	NA	NA	NA
100	735943	NONE	NO	NO	28	20	24	6	7	40	NO	NA	NA	NA	NA
101	589182	NONE	NO	NO	20	18	30	6	6	34	NO	NA	NA	NA	NA
102	43251	NONE	NO	NO	16	20	33	6	5	30	NO	NA	NA	NA	NA
103	94013	NONE	NO	NO	18	16	26	5	5	44	NO	NA	NA	NA	NA
104	1300632	NONE	NO	NO	15	16	30	5	5	35	NO	NA	NA	NA	NA
105	289403	NONE	NO	NO	18	15	28	5	5	40	NO	NA	NA	NA	NA
106	79094	NONE	NO	NO	24	22	40	20	5	24	NO	NA	NA	NA	NA
107	272755	NONE	NO	NO	18	16	35	18	5	29	NO	NA	NA	NA	NA
108	40263	NONE	NO	NO	16	18	29	6	4	40	NO	NA	NA	NA	NA
109	1316715	NONE	NO	NO	20	25	48	16	6	28	YES	1	2	NA	NA
110	942222	NONE	NO	NO	18	16	30	6	5	39	NO	NA	NA	NA	NA
111	1013287	NONE	NO	NO	20	15	29	18	5	35	YES	NA	NA	NA	NA
112	16577	NONE	NO	NO	18	16	28	6	4	40	NO	NA	NA	NA	NA
113	1156444	NONE	NO	NO	16	20	29	7	5	28	NO	NA	NA	NA	NA
114	1322836	NONE	NO	NO	30	26	44	11	7	26	NO	NA	NA	NA	NA
115	1251770	NONE	NO	NO	20	23	35	8	5	30	NO	NA	NA	NA	NA
116	1178744	NONE	NO	NO	18	20	40	12	5	25	NO	NA	NA	NA	NA
117	491476	NONE	NO	NO	18	16	28	16	4	34	NO	NA	NA	NA	NA
118	46174	NONE	NO	NO	24	18	44	6	5	40	NO	NA	NA	NA	NA
119	113498	NONE	NO	NO	20	22	39	12	4	40	NO	NA	NA	NA	NA
120	1326704	NONE	NO	NO	34	26	48	7	7	24	NO	NA	NA	NA	NA
121	68089	NONE	NO	NO	18	19	26	6	4	33	NO	NA	NA	NA	NA
122	46174	NONE	NO	NO	22	18	34	6	5	29	NO	NA	NA	NA	NA
123	431309	NONE	NO	NO	20	18	40	15	5	30	NO	NA	NA	NA	NA
124	558158	NONE	NO	NO	18	20	35	8	4	34	NO	NA	NA	NA	NA
125	101367	NONE	NO	NO	17	16	34	14	5	38	NO	NA	NA	NA	NA
126	135304	NONE	NO	NO	18	14	28	20	4	36	NO	NA	NA	NA	NA
127	1141970	NONE	NO	NO	16	20	34	21	4	25	YES	NA	NA	NA	NA
128	71592	NONE	NO	NO	14	12	26	7	4	48	NO	NA	NA	NA	NA

S NO.	MRD NO.	INITIALS	AGE	GENDER	MARITAL STATUS	EDUCATION	OCCUPATION / LOSS OF FUNCTION	INCOME	SOCIOECONOMIC CLASS	TYPE OF FAMILY	URBAN / RURAL	DURATION OF ILLNESS (years)	AGE OF ONSET OF SCHIZOPHRENIA	TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE(years)	COMPLAINCE	CO-MORBID NICOTINE USE	FAMILY HISTORY OF SCHIZOPHRENIA
129	1026869	CS	33	M	DIVORCED	8	UNEMPLOYED	NONE	3	JOINT	RURAL	4	29	1.00	YES	NO	NONE
130	372256	RK	34	F	UNMARRIED	12	UNEMPLOYED	NONE	3	JOINT	URBAN	4	30	0.67	YES	NO	NONE
131	1291849	BS	18	F	UNMARRIED	10	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	0.5	18	0.50	YES	NO	NONE
132	1087541	TS	31	M	UNMARRIED	BA	UNEMPLOYED	NONE	4	JOINT	URBAN	6	25	2.00	YES	YES	NONE
133	255024	N	43	F	DIVORCED	10	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	3	38	0.50	YES	NO	NONE
134	1172336	S	26	F	UNMARRIED	12	UNEMPLOYED	NONE	3	JOINT	URBAN	6	20	1.00	YES	NO	NONE
135	56878	MK	53	M	MARRIED	8	UNEMPLOYED	NONE	4	JOINT	RURAL	25	28	3.00	YES	YES	NONE
136	898657	ND	54	F	MARRIED	10	UNEMPLOYED	NONE	5	JOINT	RURAL	12	32	3.00	YES	NO	FATHER
137	211175	RK	47	M	MARRIED	12	UNEMPLOYED	NONE	4	JOINT	RURAL	20	27	1.00	YES	YES	NONE
138	78721	N	35	F	MARRIED	BA	UNEMPLOYED	NONE	3	JOINT	RURAL	16	19	1.00	YES	NO	NONE
139	732777	SLP	30	M	UNMARRIED	8	UNEMPLOYED	NONE	4	JOINT	URBAN	6	24	1.00	YES	YES	GRANDFATHER
140	1330128	BS	40	M	DIVORCED	B TecH	UNEMPLOYED	NONE	3	JOINT	RURAL	6	34	0.50	YES	YES	NONE
141	60274	CD	26	M	UNMARRIED	12	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	10	16	1.00	YES	NO	NONE
142	1311119	MK	47	F	MARRIED	8	UNEMPLOYED	NONE	4	JOINT	RURAL	10	37	0.50	YES	NO	NONE
143	1224183	H	29	M	UNMARRIED	BA	UNEMPLOYED	NONE	4	JOINT	URBAN	9	20	2.00	YES	YES	MATERNAL GRANDFATHER
144	1325938	RS	28	F	DIVORCED	MBA	UNEMPLOYED	NONE	3	NUCLEAR	URBAN	2	26	0.67	NO	NO	NONE
145	1317370	HS	20	F	UNMARRIED	12	UNEMPLOYED	NONE	4	NUCLEAR	RURAL	2	18	0.50	YES	NO	NONE
146	11502	AK	26	F	UNMARRIED	10	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	7	19	0.50	YES	NO	NONE
147	1216004	SS	30	M	UNMARRIED	12	UNEMPLOYED	NONE	4	NUCLEAR	URBAN	10	20	0.50	NO	YES	NONE
148	1293233	NS	28	M	UNMARRIED	B Pharma	UNEMPLOYED	NONE	3	NUCLEAR	RURAL	2	26	0.50	YES	YES	NONE
149	1301029	A	21	F	UNMARRIED	12	UNEMPLOYED	NONE	4	JOINT	URBAN	3	19	1.00	YES	NO	NONE
150	1333722	IS	26	M	UNMARRIED	12	UNEMPLOYED	NONE	4	JOINT	URBAN	8	18	3.00	NO	NO	NONE

S NO.	MRD NO.	FAMILY HISTORY OF ANY MENTAL ILLNESS OTHER THAN SCHIZOPHRENIA	PAST HISTORY OF SUICIDAL IDEATION/ BEHAVIOR/ ATTEMPT	FAMILY HISTORY OF SUICIDE	PANSS-POSITIVE SCORE	NEGATIVE SCORE	GENERAL PSYCHOPATHOLOGICAL SCORE	HAM-D	CGI-S – SEVERITY SCORE	QOLS- TOTAL SCORE	C-SSRS SUICIDAL IDEATION	C-SSR SCORE FOR SUICIDAL IDEATION (HIGHEST LEVEL ENDORSED 1-5)	INTENSITY OF IDEATION (2-25)	MEDICAL DAMAGE FOR ATTEMPT (0-5)	POTENTIAL LETHALITY (IF MEDICAL DAMAGE 0) (0-2)
129	1026869	NONE	NO	NO	21	16	40	11	5	28	NO	NA	NA	NA	NA
130	372256	NONE	NO	NO	18	20	36	7	4	30	NO	NA	NA	NA	NA
131	1291849	NONE	NO	NO	18	16	29	6	5	35	NO	NA	NA	NA	NA
132	1087541	NONE	NO	NO	25	22	34	10	4	29	NO	NA	NA	NA	NA
133	255024	NONE	NO	NO	16	12	44	11	4	35	NO	NA	NA	NA	NA
134	1172336	NONE	NO	NO	18	12	30	7	4	40	NO	NA	NA	NA	NA
135	56878	NONE	NO	NO	14	12	28	18	4	28	NO	NA	NA	NA	NA
136	898657	NONE	NO	NO	18	20	33	8	5	28	NO	NA	NA	NA	NA
137	211175	NONE	NO	NO	18	12	40	16	5	30	NO	NA	NA	NA	NA
138	78721	NONE	NO	NO	14	16	30	7	4	32	NO	NA	NA	NA	NA
139	732777	NONE	NO	NO	16	14	25	6	4	45	NO	NA	NA	NA	NA
140	1330128	NONE	NO	NO	14	14	44	22	6	28	YES	1	2	NA	NA
141	60274	NONE	NO	NO	18	20	35	7	4	30	NO	NA	NA	NA	NA
142	1311119	NONE	NO	NO	21	18	38	6	5	38	NO	NA	NA	NA	NA
143	1224183	NONE	NO	NO	15	18	29	8	4	25	NO	NA	NA	NA	NA
144	1325938	NONE	NO	NO	18	24	40	8	4	24	NO	NA	NA	NA	NA
145	1317370	NONE	NO	NO	20	18	30	7	5	35	NO	NA	NA	NA	NA
146	11502	NONE	NO	NO	18	14	35	7	4	35	NO	NA	NA	NA	NA
147	1216004	NONE	NO	NO	24	26	40	8	6	28	NO	NA	NA	NA	NA
148	1293233	NONE	NO	NO	18	14	35	7	4	45	NO	NA	NA	NA	NA
149	1301029	NONE	NO	NO	16	18	40	10	4	32	NO	NA	NA	NA	NA
150	1333722	NONE	NO	NO	26	22	45	5	6	34	NO	NA	NA	NA	NA

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The Principal,
DMC, Ludhiana.

Subject: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 29.10.2021 has approved the plan of thesis of **Cherry Sikka**, a student of your college for **MD Psychiatry** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
To study prevalence of depression, suicidality and quality of life in patients of schizophrenia.

Supervisor
Dr. Rupesh Chaudhary
Prof.,
Dept. of Psychiatry,
DMCH, Ludhiana.

Co-Supervisor

Dr. Pankaj Kumar
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Dept. of Psychiatry,
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The student has to submit the four copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

107. If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.

108. The student may submit the thesis as per the schedule already conveyed i.e for May/June examination 30th Nov of the preceding the year of examination and for Nov/Dec examinations 31st May of the year of examination.

TO STUDY PREVALENCE OF DEPRESSION, SUICIDALITY AND QUALITY OF LIFE IN PATIENTS OF SCHIZOPHRENIA

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

DOCTOR OF MEDICINE

In

PSYCHIATRY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

MARCH, 2021

DR. CHERRY SIKKA

DEPARTMENT OF PSYCHIATRY
DAYANAND MEDICAL COLLEGE AND HOSPITAL
LUDHIANA

ABSTRACT OF PLAN OF THESIS

Title	TO STUDY PREVALENCE OF DEPRESSION, SUICIDALITY AND QUALITY OF LIFE IN PATIENTS OF SCHIZOPHRENIA
For the degree of	MD PSYCHIATRY
Name of the candidate	DR. CHERRY SIKKA
Supervisor	DR. RUPESH CHAUDHARY, Professor, Department of Psychiatry, DMCH, Ludhiana
Co-supervisor	DR. PANKAJ KUMAR, Associate Professor, Department of Psychiatry, DMCH, Ludhiana
Institution	Dayanand Medical College & Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Schizophrenia is a neuropsychiatric illness with the prevalence of 1% in general population. It is predominantly characterized by positive and negative symptoms with the negative symptoms causing chronic morbidity and functional impairment in these patients. Depression being common in schizophrenia remains unerdiagnosed as the appearance of apathy and affective blunting can be attributed to the disease processes intrinsic to schizophrenia instead of a treatable mood disorder. There are many clinical similarities between the 'negative symptoms' of schizophrenia and depression hence needs to be differentiated between the two. Also depression in schizophrenia is an important factor influencing the quality of life and risk of suicide.

Aim of Study:

- Primary- To assess the prevalence of depression and suicidality among patients of schizophrenia.
- Secondary-To determine the quality of life.

Materials & methods: This Cross-sectional study will be conducted in Department of Psychiatry of DMC&H, Ludhiana on 150 patients diagnosed with schizophrenia. Patients will be assessed using Positive and negative syndrome rating scale(PANSS) for symptoms of schizophrenia, Hamilton depression rating scale (Ham-D) for depression, Clinical global impression-severity scale (CGI-S) for severity of illness, Columbia-Suicide Severity Rating Scale(C-SSRS) for risk of suicide and Quality of Life Scale (QOLs) for quality of life.

Clinical Significance: Depressive symptoms frequently co-exist in schizophrenia to the tune of 1% and appear to be a manifestation of the schizophrenia symptom spectrum in most patients. It consequently impacts the risk of suicide and quality of life. Depression is considered to be an important factor in completed suicide in patients of schizophrenia, even more than acting on command hallucinations. Also due to overlapping spectrum of the negative symptoms and the symptoms of depression it becomes an important aspect to identify co-morbid depression in patients with schizophrenia so that this understanding and awareness helps in developing extended therapeutic approach in such patients.

Keywords: Schizophrenia, Depression, Suicide, Quality of life.

(Signature) Candidate	(Signature) Co-supervisor	(Signature) Supervisor	(Signature) Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"TO STUDY PREVALENCE OF DEPRESSION, SUICIDALITY AND QUALITY OF LIFE IN PATIENTS OF SCHIZOPHRENIA"** exist in the Department of Psychiatry, DMC&H, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis is genuine and is collected by the candidate herself under our supervision and guidance.

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Dr. Rupesh Chaudhary
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Date : _____

APPROVAL PROFORMA
BY RESEARCH & ETHICAL COMMITTEE
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Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Anu Sharma (Professor, Anatomy)
Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)	Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)
Dr. Gurpreet S Wander (Vice Principal)	Dr. Gurpreet S Wander (Vice Principal & Professor & Head, Cardiology)
	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / No

Chairperson
Research Committee

Approved: Yes / ~~No~~

Chairperson
Ethics Committee

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

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2	NAME OF THE INSTITUTE	DAYANAND MEDICAL COLLEGE AND HOSPITAL, LUDHIANA, PUNJAB.
3	COURSE OF STUDY AND SUBJECT	MD PSYCHIATRY
4	DATE OF ADMISSION OF COURSE	31/07/2020
5	TITLE OF THE TOPIC	TO STUDY PREVALENCE OF DEPRESSION, SUICIDALITY AND QUALITY OF LIFE IN PATIENTS OF SCHIZOPHRENIA

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Schizophrenia is a neuropsychiatric illness presenting with positive symptoms like delusions, hallucinations and negative symptoms such as avolition, anhedonia, blunted affect, as commonly seen in the clinical practices.[1] Schizophrenia as a spectrum disorder consists of five domains namely positive, negative, affective, aggressive and cognitive. The negative symptoms are mainly responsible for the chronic debility leading to morbidity and functional impairment in patients of schizophrenia which present as anhedonia, affective flattening, avolition, apathy, alexithymia, etc.[1] Such similar symptoms are also found in depression. Depression is common in schizophrenia, and if attention not paid during the clinical assessment, it can be easily missed, and the symptoms of apathy and affective blunting might be easily confused with the disease presentation of schizophrenia instead of a separate, treatable mood disorder. Siris et al., argued that depression is often a side effect of antipsychotics. Others assume depression as a psychological reaction to schizophrenia. Hence, it becomes apparent that the most fundamental part of schizophrenia is depression.[2] Depression is very commonly found among the patients with schizophrenia and its severity correlates with the severity of positive and negative symptoms, higher disability rates, resistance to treatment and mortality caused by suicide, and other causes such as drug abuse.[3] A number of studies providing evidences underrate the presence of co-morbid depression and schizophrenia. Also, a considerable proportion of patients with schizophrenia suffer with depression and present symptoms corresponding to the illness during the course throughout their illness. It was therefore being proposed by various studies that depression is essentially a part of schizophrenia. The reported prevalence, as per a study, of co-morbid depression among patients with schizophrenia is 7–75%, mode of this range being 25% (Mohamed et al., 2012). Even in epidemiological studies the prevalence of depression is seen to be high among people with schizophrenia as compared with the general popu-

lation. Although there are classifications for overlapping symptoms of both schizophrenia and depression like schizoaffective disorder or as post psychotic depressive disorder (DSM IV) and as post psychotic depression (ICD10), the challenge to diagnosis of both as separate entities still remain.[4] Depressive symptoms can be secondary to the negative symptoms. The main depressive symptoms associated with schizophrenia can be broadly categorized into three categories which are depression symptoms that are secondary to underlying organic factors, depressive symptoms that are intrinsic to acute psychotic episodes and those that do not stem from temporally acute episodes. The negative symptoms of schizophrenia and depression have many similarities clinically, for example, features such as lack of energy, social withdrawal and anhedonia are clinically confusing in cases involving either of the two disorders. The two symptoms that might help to differentiate both syndromes are low mood (indicating depression) and prominent blunting of affect (suggesting schizophrenia). Other symptoms that might be helpful in picking up depression are hopelessness, guilt, helplessness, anxiety and suicidal thinking. According to Twana et al., (2017) about 59% of patients with schizophrenia suffer from depression be it minor or major. As compared to the acute phase, depression is rather more commonly found in the chronic phase of schizophrenia. Depression is also associated with the severity of the illness being more and less in acute and complete remission phases of schizophrenia respectively.[5] This phenomenology in schizophrenia can be described by the following terms such as post-psychotic depression, secondary depression and post-schizophrenic depression.[5] Depression in schizophrenia has been recognizable factor as one of the important one influencing the quality of life (QOL). QOL scores were found to be significantly lower in schizophrenia population having co-morbid depression. A widely used comprehensive definition of QOL was given by WHOQOL Group (1995) where they defined it as individuals' perception of their position in life in the context of the culture and value systems in which they live and their related goals, expectations, standards and concerns (WHOQOL Group, 1995). As per Lehman (1996) was described as pa-

tients' perspective on what they possess, how they are doing and how they feel about their life circumstances.[6] Cai- lan Hou et al.,(2016) suggested depression primarily affects the routine activities and social functions like general reduced functioning, worse employment status, poor quality of life, a greater risk of relapse or hospitalization, and an increased risk of suicide.[7] Studies suggest that patients who reported higher scores on subjective quality of life scales had no or minimal depression.[8] In his study on Chinese schizophrenic patients, Yan (2012) found that quality of life had an impact on suicidal thoughts.[7] Depression is the most significant factor in completed suicide in schizophrenia, more so than acting on command hallucinations (Rachel et al.,2017).[9] The idea of suicide among schizophrenics being somewhat unpredictable, and that schizophrenics often fail to communicate their suicidal intent directly is widely held. However, it was found that before suicide, suicide victims with schizophrenia try to communicate their suicidal intent as often as others. Tero Taimminem et al.,(2000) found that the lifetime risk of suicide in schizophrenia is estimated to vary between 4 and 10%. Currently, no suicide risk scale has been developed particularly for schizophrenic patients. Estimates suggest that the life of one out of 10 schizophrenic patients ends in suicide. Proposed risk factors for suicide in schizophrenia are incomplete and inconsistent. Between 25% and 50% of all schizophrenic suicides are committed during psychiatric care in hospital settings, and about one-half of the victims commit suicide within 3 months of getting discharge from the hospital. This means that schizophrenic patients who commit suicide are closely connected with the mental health facility than suicide victims in general, and therefore it ought be possible to prevent suicide in schizophrenic patients.[10] We designed the present study assess the prevalence of depression among patients of schizophrenia, grade the severity of depression and to further determine its influence on suicidality and the quality of life of the patients. In this study we aim to correlate the severity of symptoms of schizophrenia with presence of depression. Depression will be categorised into mild, moderate, severe and very severe type of depression. Knowing this we will be able to assess the risk of

suicide in patients of schizophrenia having co-morbid depression. This will help us changing the lines of management and will further prove to be useful for rehabilitation purposes. As depression is largely underdiagnosed in schizophrenia, early diagnosis and timely interventions are required to treat the same, improve the quality of life and reduce the severity of the illness in such patients.[11] With the help of above information we are aiming to assess symptom-pattern of depression secondary-to-schizophrenia clinically so as to provide a better assessment and more efficient treatment to psychiatric patients. Recognizing depression as a separate treatable mood episode in the course of schizophrenia is a challenging task. Detailed evaluation and assessment must include the implications of tools to diagnose affective symptoms along with other domains of schizophrenia and find if those symptoms fulfill the criteria for an independent mood disorder rather than attributable to the phenomenology of schizophrenia itself.

6.2 REVIEW OF LITERATURE

Depressive symptoms can contribute to schizophrenia exacerbation and, when present during the initial course of the disease and admission to hospital, might result in a quick relapse; making the recognition and treatment of depression of paramount importance in schizophrenia (Jing Dai et al., 2017, using HAM-D).[12] Such discrepancy in prevalence of depression among various studies could be partly due to the differences in the stage of schizophrenia, criteria and different tools used for assessment of depression and sampling methods (Cai-Lan et al. 2016), using Montgomery Ashberg Depression Rating Scale (MADRS).[7] The prevalence of depression in patients with schizophrenia can range from 6−75% , the average being 25% (Mohamed et al.,2012) using Calgary Depression Scale for schizophrenia (CDSS). Gozdzik-zelazny et al., 2011 found that the prevalence of clinically significant depression in schizophrenic patients was 61% on Beck's Depression Inventory 2 (BDI-2).[13] Depressive symptoms (defined as a total score of 9 or above on MADRS) were present in 54.1% of patients, out of which 17.7% had comorbid depression.

Twana et al. (2017) proposed that the depression is the most common symptom found in the patients suffering from schizophrenia and the major depressive symptoms in these patients were early morning insomnia and mood variations, which could not be elicited in their study using CDSS.[5] Various evidences also shows substantial genetic overlap between schizophrenia and major depressive disorder (Jing Dai et al., 2017).[12]

Jing Dai et al., (2017) found significant associations between Hamilton depression rating scale (Ham-D) total score and the PANSS general psychopathology, the PANSS total score. This suggested that comorbid depressive symptoms were positively associated with negative and general psychopathological symptoms in schizophrenia. Depressive and negative symptoms are more difficult to distinguish from one another in patients with schizophrenia, and both are heterogeneous in their nature, we cannot attribute causality to this simple quantitative association. Using a longitudinal study design, further evaluations of first

episode drug naive patients and their subsequent depressive and schizophrenic symptomatology would clarify their interrelationship.[12] Statistically significant difference ($p<0.05$) was noted between the two groups on general psychopathology subscale score but not in positive, negative and total PANSS scores.[12] When the scores on the general psychopathology were reanalyzed by excluding the PANSS-D (depressive subscale of PANSS) items (Depression, anxiety, somatic concern and guilt), the significant difference on the general psychopathology subscale disappeared and there was significant difference between the two groups only on PANSS-D items scores (Amitava Dan et al.,2011).[6]

Tolesa Fanta et al., (2020) believed that there was strong evidence of a positive association between depression and history of substance use, history of suicidality, duration of illness and quality of life (using Patient Health Questionnaire (PHQ-9)) among these patients.[3] Comorbid depressive symptoms are common at all stages of schizophrenia and occurs in up to 70% of schizophrenia patients (using MADRS), leading to serious co-morbidities, such as frequent relapse, increased burden of illness, higher risk for suicide and poorer quality of life (QOL) (Cai-Lan et al.,2016).

In the same study by Cai-Lan Hou et al.,(2016) it was found that depression was negatively associated with the QOL imposing an important role depressive symptoms play in contributing to QOL even in clinically stable patients with schizophrenia.[7] According to Najmeh et al.,(2016) fewer symptoms of depression and higher quality of life in schizophrenic patients can predict early recovery in psychopathology, quality of life, and well-being. Multiple studies conducted by Babinkostova et al. (2011), Kao et al. (2011), Renwick et al. (2012), and Conton et al. (2010), Priebe et al. (2011) also suggest the same result. Hence depression in such patients is one of the important factors affecting their quality of life (on Schizophrenia Quality Of Life Scale-SQLS and BDI-2). Depressive symptoms can be said to predict poor QOL in schizophrenia. This study also suggests that poor social support can also affect QOL. If efforts to reduce the symptoms of depres-

sion in schizophrenia are made it can improve the quality of life in such patients (Najmeh et al., 2016).[11] Philip et al., (2017) reported that chronic schizophrenia patients who reported extraordinarily high levels of subjective quality of life, in which they said that they were “pleased” or “delighted” with their lives, reported depression severity that was negligible and significantly less severe than patients with poorer self reported quality of life.[14]

In his study on Chinese schizophrenic patients, Yan (2012) found that quality of life had an impact on suicidal thoughts. Symptoms of depression are among the major risk factors for suicide in such patients (Yan, 2012; Kao et al., 2011). According to Kao et al. (2011), schizophrenia is associated with high risk of suicide, depression, and psychopathic symptoms; and low quality of life–especially dissatisfaction with social relations–must be considered while assessing the suicide risk in such patients. According to Taghavi et al. (2008), the level of depression in acute and complete remission phases was high and low respectively.[11] Compared to the general population (suicide prevalence about 1%), people with schizophrenia have a more than eightfold increased risk of suicide (Ruberto et al.,2012). About 20 to 40% of patients with schizophrenia attempt suicide in their lifetime and around 5% die by completed suicide. The lifetime suicide attempt rate in schizophrenia is found to be lower than that in major depressive disorder, but attempts being more serious, results in significant physical harm (44% vs 16%).[15]

Kelly E. Gill et al;(2015) gave an evidence that the majority of individuals with schizophrenia (40–79%) have had suicidal ideation (SI) at least some time during their course of illness. They used C-SSR scale for its assessment which specifically probes parasuicidal ideation (wish to be dead, without intent or plan), the nature (intent and plan), and intensity (frequency, duration, controllability, potential deterrents, reasons) of suicidal ideation, as well as the nature of any suicide attempts (and if interrupted, aborted, or preparatory).[16] It has been established that the risk of suicide is more than 8 times higher among patients with schizophrenia than in the general population (Taiminen et al., 2000).[10] Ap-

proximately 5–10% of schizophrenia patients eventually commit suicide (Cai-Lan et al. 2016)[7]; Therefore it is considered that the patients with co-morbid depression have higher rate of suicidal ideation. Suicide can be considered as the major cause of premature death among individuals with schizophrenia. Evidences indicated that up to 10% of patients with schizophrenia die by suicide (Bereket et al. 2018).[17] A major hurdle in the prevention of suicide in schizophrenia is the difficulty in evaluating the risk of suicidal behaviors, as suicide in this patient population usually is the result of a sudden, impulsive act that makes the traditional assessment methods based on rating scales and interviews of little use (Roberto et al. 2012).[15]

In 2000, Siris published “Depression in the era of atypical antipsychotic agents” and recomended that antipsychotic dose reduction or changing to a atypical antipsychotic may reduce the chances of depression (Siris et al. 2000).[2] Yet the prevalence of depression in schizophrenia has remained high, and rates of suicide unaltered, despite the wide use atypical antipsychotics, suggesting more treatment options are needed (Rachel et al. 2016, using CDSS). Even though depression in schizophrenia is increasingly recognized as a dimension of schizophrenia psychopathology, clinically it remains inadequately treated (Mohamed et al. 2012).[4] Depression is the most significant factor in completed suicide in schizophrenia, more so than acting on command hallucinations (Rachel et al. 2017).[9]

Stefan Leucht et al.,(2019) stated linking ratings from a psychometric scale with a clinical global impression can help clinicians interpret clinical trial results in a more meaningful way. For the first time they included CGI to psychometric rating scales in psychiatric population and their scores corresponded to each other.[1] Twana Rahim & Roshe Rashid et al.,(2017) acknowledged their limitation that they ignored the assessment of both symptoms and severity of schizophrenia which we will conduct in our study.[5]

To sum up, the preexisting literature shows significant presence of depression in patients with schizophrenia which is mostly overlooked. It has an impact on the phenomenonology, course and outcome of the

patient. Presence of depression also impacts the risk of suicide and QOL in patients of schizophrenia which needs to be addressed for a better outcome and rehabilitation of patients. As there is dearth of Indian literature on this context, hence this study has been panned, to correlate depression in schizophrenia patients and its consequent effect on suicidality and QOL.

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6.3 AIMS AND OBJECTIVES OF THE STUDY

- Primary- To assess the prevalence of depression and suicidality among patients of schizophrenia.
- Secondary-To determine the quality of life.

7. MATERIALS AND METHODS

7.1 Source of Data

The diagnosed cases of schizophrenia will be included from the Outpatient and Inpatient Department of Psychiatry of DMC&H, Ludhiana after taking informed written consent from the patient or the primary caregiver.

7.2 METHOD OF COLLECTION OF DATA

Sample collection: This hospital based, cross-sectional study, will be conducted in Dayanand Medical College & Hospital, Ludhiana over a period of one year. A total of 150 schizophrenia patients will be included in the study.

Inclusion criteria:

1) Age >18 years and <65 years.

2) Diagnosed cases of schizophrenia as per DSM 5.

3) Patient / primary caregiver who gives consent for the study.

Exclusion Criteria:

1) Age <18 years and >64 years.

2) Any patient with other co-morbid psychiatric and medical illness (except nicotine dependence).

3) Patient/primary caregiver who doesn't consent for the study.

TOOLS

1) POSITIVE AND NEGATIVE SYNDROME SCALE (PANSS)

2) HAMILTON DEPRESSION RATING SCALE (Ham-D)

3) COLUMBIA-SUICIDE SEVERITY RATING SCALE (C-SSRS)

4) CLINICAL GLOBAL IMPRESSION-SEVERITY SCALE (CGI-S)

5) QUALITY OF LIFE SCALE (QOLS)

6) SOCIO-DEMOGRAPHIC PERFORMA

PANSS -The instrument was developed by Kay et al. (1987) to assess psychopathology of schizophrenia which includes: positive, negative, general psychopathology symptoms. It has 30 items on 1–7 point continuums. The estimation of the reliability and internal consistency showed high values of Cronbach's alpha (0.809 and 0.931).

- 30 item scale with 3 categories of symptoms,

POSITIVE (7 items-score range 7-49)

NEGATIVE (7 items-score range 7-49)

GENERAL PSYCHOPATHOLOGY (16 items-score range 16-112)

- **HAM-D -** Hamilton Depression Rating Scale (HAMD) (Hamilton, 1960; Zhang, 1993).The scoring is based on the first 17 items. Eight items are scored on a 5-point scale, ranging from 0 (not present) to 4 (severe). Nine items are scored from0 (none) to 2 (symptom-specific severity descriptor). Patients were classified into two groups using HAMD rating cut-offs: ≤7 = not depressed (NDP) and ≥8 = depressed (DP) (Park et al., 2016). Then moderate to severe depressive symptoms were defined as a total score of 14 or above on the HAMD-17(Liu et al., 2014).

  -21 item scale, scoring is based on first 17 items,

  NORMAL (score 0-7)

  MILD DEPRESSION (score 8-13)

  MODERATE DEPRESSION (score 14-18)

  SEVERE DEPRESSION (19-22)

  VERY SEVERE DEPRESSION (>22)

- **CSSRS** –To assess the suicidal ideation, intensity of ideation and suicidal behaviour. Sum ranges from 2-25, with the higher number indicating more intense ideation.
- **CGI-S** -Cross-sectional scale, rating the severity of illness ranging from normal (1) to extremely ill subjects (7). Derived from clinical global impression scale, which is a global rating scale that gives an overall measure of the severity of a patient's illness.
- **QOLS**

  - 16 Item scale assessing quality of life.
  - Higher the score, better the quality.

  OUTCOME : To find the prevalence of depression among patients of schizophrenia and its effect on their quality of life.

  STATISTICAL ANALYSIS: Data will be described in terms of range; mean ±standard deviation (± SD), frequencies (number of cases) and

relative frequencies (percentages) as appropriate. Pearson correlation will be used. Comparison of quantitative variables between the study groups will be done using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. For comparing categorical data, Chi square ($\chi 2$) test will be performed and exact test was used when the expected frequency is less than 5. A probability value (p value) less than 0.05 will be considered statistically significant. All statistical calculations will be done using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

No

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Attached herewith

LIST OF REFERENCES

1. Leucht S, Barabássy Á, Laszlovszky I, Szatmári B, Acsai K, Szalai E, et al. Linking PANSS negative symptom scores with the Clinical Global Impressions Scale: understanding negative symptom scores in schizophrenia. Neuropsychopharmacology. 2019;44:1589-96.
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7. Hou CL, Ma XR, Cai MY, Li Y, Zang Y, Jia FJ, et al. Comorbid moderate–severe depressive symptoms and their association with quality of life in Chinese patients with schizophrenia treated in primary care. Community mental health journal. 2016;52:921-6.
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10. Taiminen T, Huttunen J, Heilä H, Henriksson M, Isometsä E, Kähkönen J, et al. The Schizophrenia Suicide Risk Scale (SSRS): development and initial validation. Schizophrenia Research. 2001;47:199-213.
11. Shargh NA, Rostami B, Kosari B, Toosi Z, Majelan GA. Study of relationship between depression and quality of life in patients with chronic schizophrenia. Global journal of health science. 2016;8:224.
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13. Gozdzik-Zelazny A, Borecki L, Pokorski M. Depressive symptoms in schizophrenic patients. European journal of medical research. 2011;16:549-52.
14. Harrow M, Yonan CA, Sands JR, Marengo J. Depression in schizophrenia: are neuroleptics, akinesia, or anhedonia involved?. Schizophrenia Bulletin. 1994;20:327-38.
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16. Gill KE, Quintero JM, Poe SL, Moreira AD, Brucato G, Corcoran CM, et al. Assessing suicidal ideation in individuals at clinical high risk for psychosis. Schizophrenia research. 2015;165:152-6.
17. Duko B, Ayano G. Suicidal ideation and attempts among people with severe mental disorder, Addis Ababa, Ethiopia, comparative cross-sectional study. Annals of general psychiatry. 2018;17:1-5.

PROFORMA

S. No.

DATE-

NAME AGE GENDER

MRD NO.

MARITAL STATUS

EDUCATION OCCUPATION/LOSS OF FUNCTION
INCOME

TYPE OF FAMILY- JOINT/NUCLEAR/LIVING ALONE

ADDRESS

CONTACT NO.

AGE OF ONSET OF SCHIZOPHRENIA

DURATION OF ILLNESS /COURSE OF ILLNESS

TIME BETWEEN ONSET OF SYMPTOMS AND SEEKING FIRST MEDICAL ADVICE

COMPLIANCE

COMORBID NICOTINE USE

FAMILY HISTORY OF SCHIZOPHRENIA

FAMILY HISTORY OF ANY MENTAL ILLNESS EXCEPT SCHIZOPHRENIA

P/H/O SUICIDAL IDEATION/BEHAVIOUR/ATTEMPT (ELABORATE IF ANY)

F/H/O SUICIDE

Signature of Candidate **Signature of Supervisor**

INFORMED PATIENT CONSENT

Date: _____

I.....D/o, W/o, S/o..... .....am willing to participate in the study **"TO STUDY PREVALENCE OF DEPRESSION, SUICIDALITY AND QUALITY OF LIFE IN PATIENTS OF SCHIZOPHRENIA"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

....

Signature of the Witness Signature of the patient

Name:

Signature of Candidate **Signature of Supervisor**

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____

निवासी _____

इस शोधकार्य **"TO STUDY PREVALENCE OF DEPRESSION, SUICIDALITY AND QUALITY OF LIFE IN PATIENTS OF SCHIZOPHRENIA"**में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक केहस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ _____"

TO STJUDY PREVALENCE OF DEPRESSION, SUICIDALITY AND QUALITY OF LIFE IN PATIENTS OF SCHIZOPHRENIA" ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ–ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ